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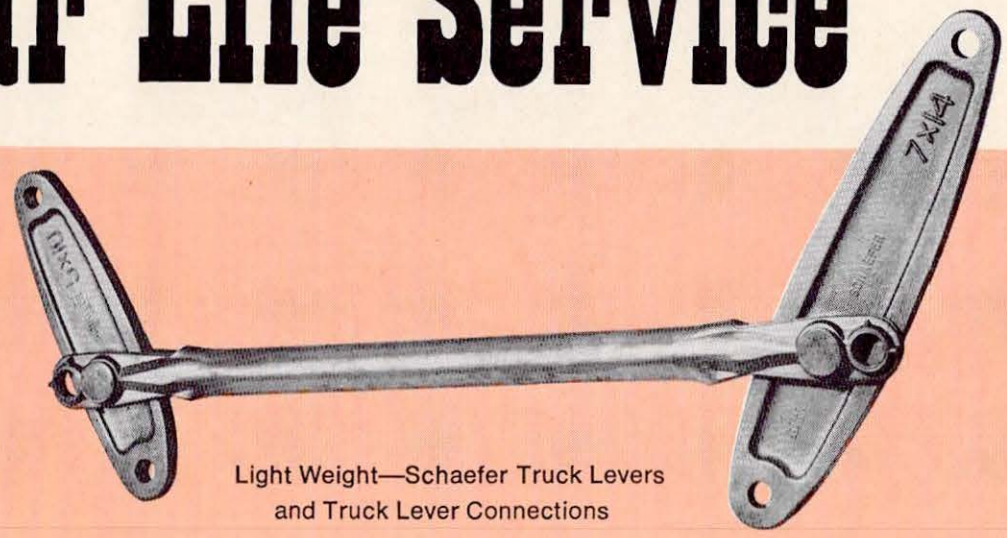

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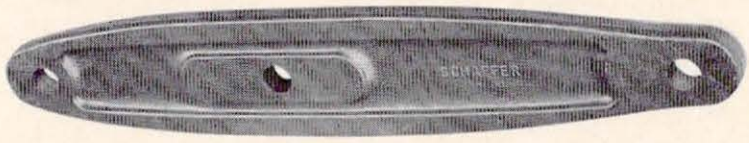

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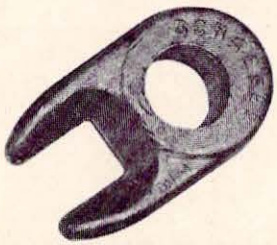
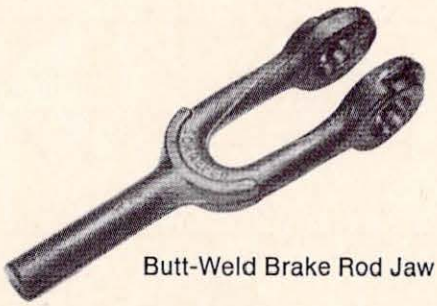


Arc Weld Brake Rod Eye



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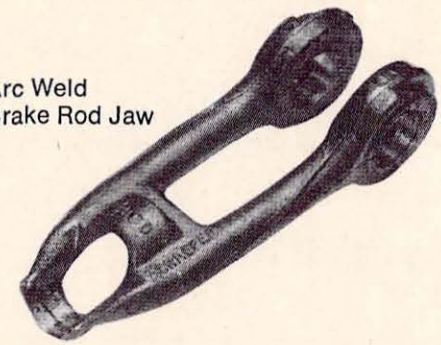

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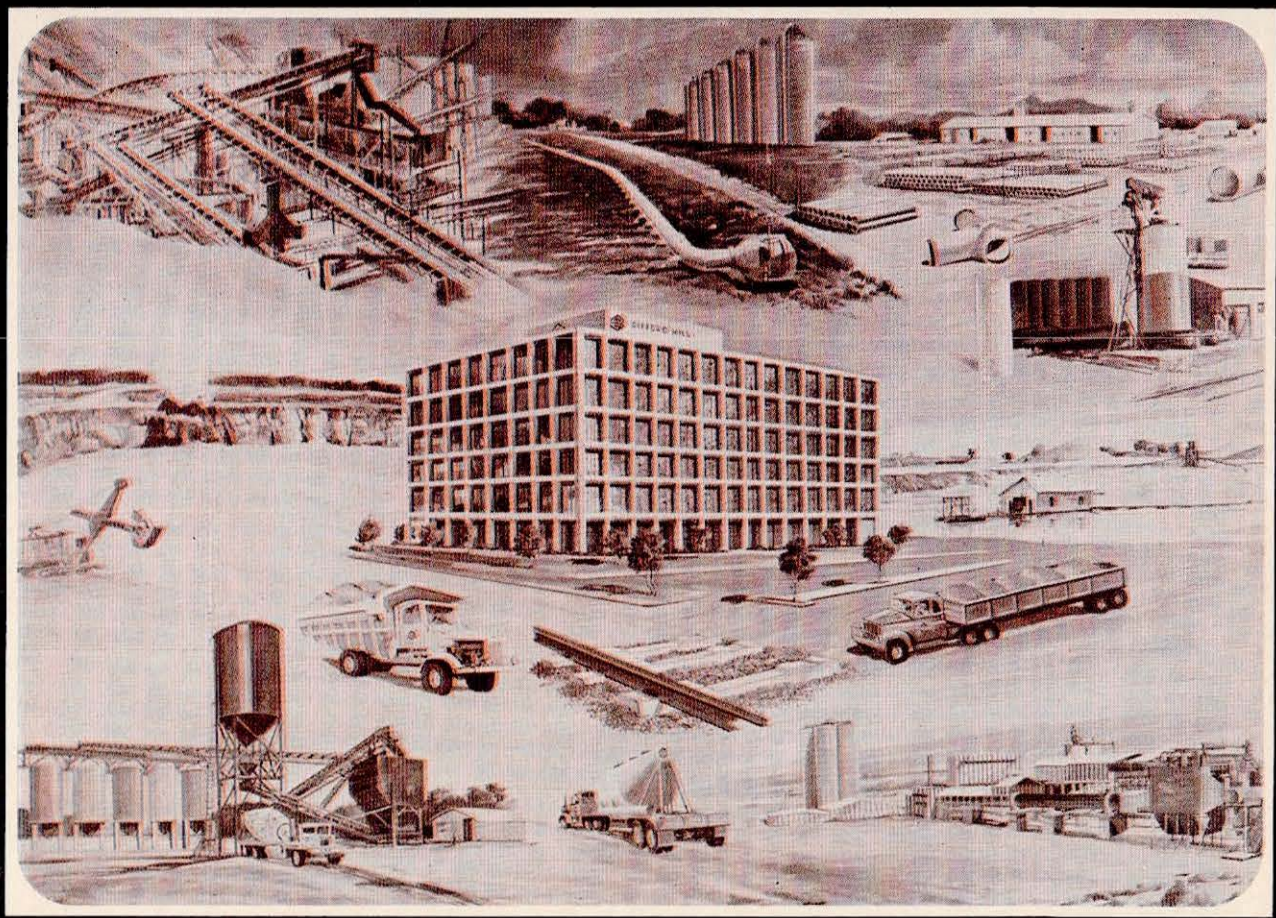

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September 13, 1971 • Vol. 171 No. 5

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Inside

LUTHER MILLER

A WORKING COALITION

The railroads and the regulated truckers and water carriers publicly buried the hatchet last week—and for once, not in each other. With TV cameras grinding, flashbulbs popping, and a small army of reporters taking notes, representatives of the Association of American Railroads, the American Trucking Associations, and the Water Transport Association stood up one by one in the State Room at Washington's Mayflower Hotel and swore allegiance to a joint legislative program worked out in great secrecy early this summer, and now before Congress in the form of the Surface Transportation Act of 1971.

This may well be a coalition of convenience—but no one who attended last week's news conference came away doubting that it will be a hard-working coalition. One reporter commented when it was all over: "This is so clearly railroad-aimed legislation that I assumed the truckers and the barge boys would show up today as reluctant dragons. On the contrary, they seemed if anything to be more enthusiastic about the whole business than anybody else."

What the Surface Transportation Act of 1971 will do for regulated transportation, and how the truckers and the barge men explain their participation in it, is described in the story (page 11) which leads off this issue's news section.

THE BRITISH ARE COMING

What did not come up at the AAR/ATA/WTA press conference was the report now circulating in both London and Washington that British Railways will play an important role in the hearings which Senator Vance Hartke (D.-Ind.) will hold on the Surface Transportation Act of 1971.

London reports that BR's new chairman, Richard Marsh, has been invited to give evidence before Hartke's committee on the British experience with nationalism. Washington reports that designers of Britain's new APT (advanced passenger train) will testify on BR's technological capability. So there is the possibility that nationalism will be the real subject of the fall hearings. Railroad men might be well advised now to start boning up on the British experience—which is not nearly as good as BR's bookkeeping indicates.

On the surface, Britain's nationalized railways appear to be showing a modest profit. But as Railway Age has reported (July 13, 1970, p. 31), this profit is more apparent than real. It exists only because an Act of Parliament, which came into force Jan. 1, 1969, wiped the deficit from BR's books by, among other things, authorizing advance "grants" rather than after-the-fact subsidies. The actual deficit of British Railways, if calculated using accepted U.S. accounting methods, is believed still to be in the hundreds of millions of dollars annually.

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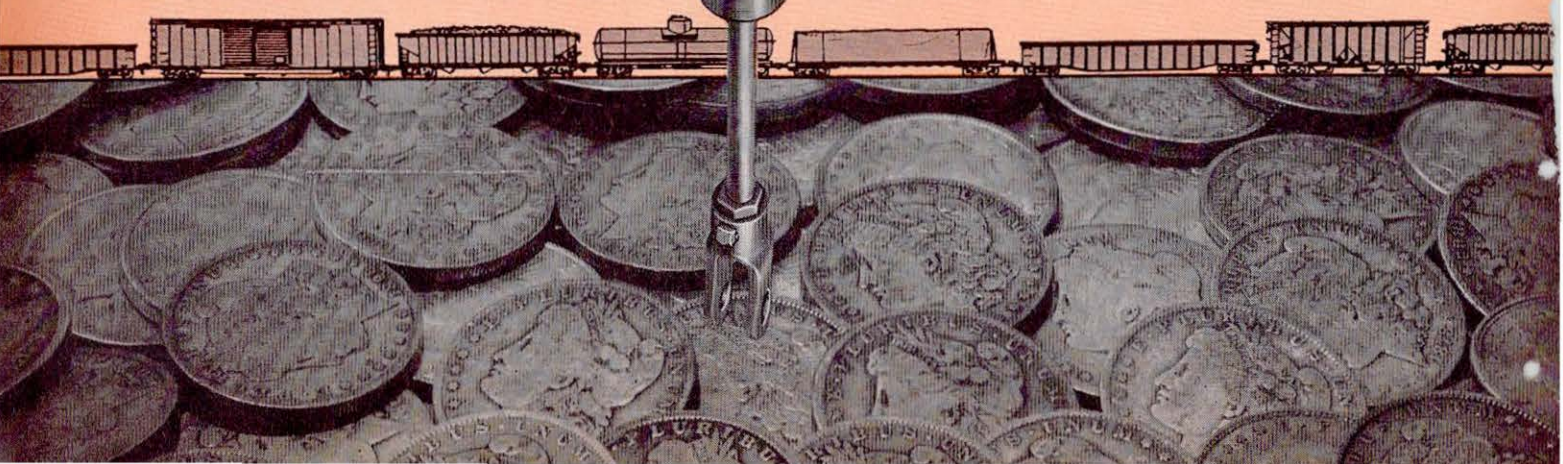

RAILWAY AGE

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COVER

Transit cars and locomotive now at Pueblo (forerunners of a large fleet of rail equipment to be tested at the DOT center) were photographed for Railway Age by John Proffitt.

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Short and Significant

THE INDUSTRY

OVERNIGHT TRAILVAN SERVICE FOR BOSTON-N.Y.

Penn Central has inaugurated overnight TrailVan piggyback service between New York City and Boston. The trains also serve New Haven and Providence. Boston-bound TV-38 has an 8:45 p.m. closing time at Harlem River Terminal, with trailers due at the South Boston Terminal by 6:45 a.m. New York-bound trailers can be delivered to South Boston as late as 8:30 p.m. for arrival at Harlem River Terminal at 6:30 a.m. As an incentive for return shipments, rates will be lowered $10 for the round trip when a trailer is loaded in both directions. PC operates a total of 36 TrailVan trains which the railroad says reach one-third of all cities in the U.S. with populations in excess of 100,000.

KATY SEEKS BARGE-LINE OPERATION

Katy Industries, Inc., parent of the Katy Railroad, has asked the Interstate Commerce Commission for authority to acquire and operate Cenac Towing, a Mississippi and Gulf barge line. Southern is still awaiting an ICC examiner's report on its request for authority to run a barge operation on the Ohio and Tennessee rivers.

EQUIPMENT STANDARDS DUE SEPT. 20

The Federal Railroad Administration says its proposed new equipment standards will be published in the Federal Register on Sept. 20. These regulations are expected to be less sweeping than the track standards on which hearings were held last month. Already cars and locomotives are subject to Federal regulation under the Safety Appliances Act, Locomotive Inspection Act, and Power Brake Law of 1958.

PC's JULY LOSS: $29.9 MILLION

Penn Central Transportation Co. reported a net loss of $29,953,761 for July—a substantial improvement from the July 1970 deficit of $33,-924,696. In June of this year PC had been able to cut its loss to $1,835,384 (RA, Aug. 9, p. 10). The trustees said July's results reflected an adverse impact from strikes against connecting lines.

MORE MODULAR HOUSING BY RAIL

Modular houses, destined for an "Operation Breakthrough" project of the U.S. Department of Housing and Urban Development, have moved from Chester, Pa., to Memphis, Tenn., on flat cars fitted with new telescopic tiedowns developed by Chesapeake & Ohio/Baltimore & Ohio. HUD's committee for transport of modular housing by rail, headed by James McCollom, departmental director of transportation, was on hand for the crane loading of units produced by General Electric at King of Prussia, Pa. The ten modules—19 and 30 feet in length—were secured laterally and longitudinally on five cars for the 1,400-mile trip via C&O/B&O and Frisco. A railroad spokeman observed: "We believe the railroads provide the safest and most efficient means for transporting the growing volume of factory-built homes."

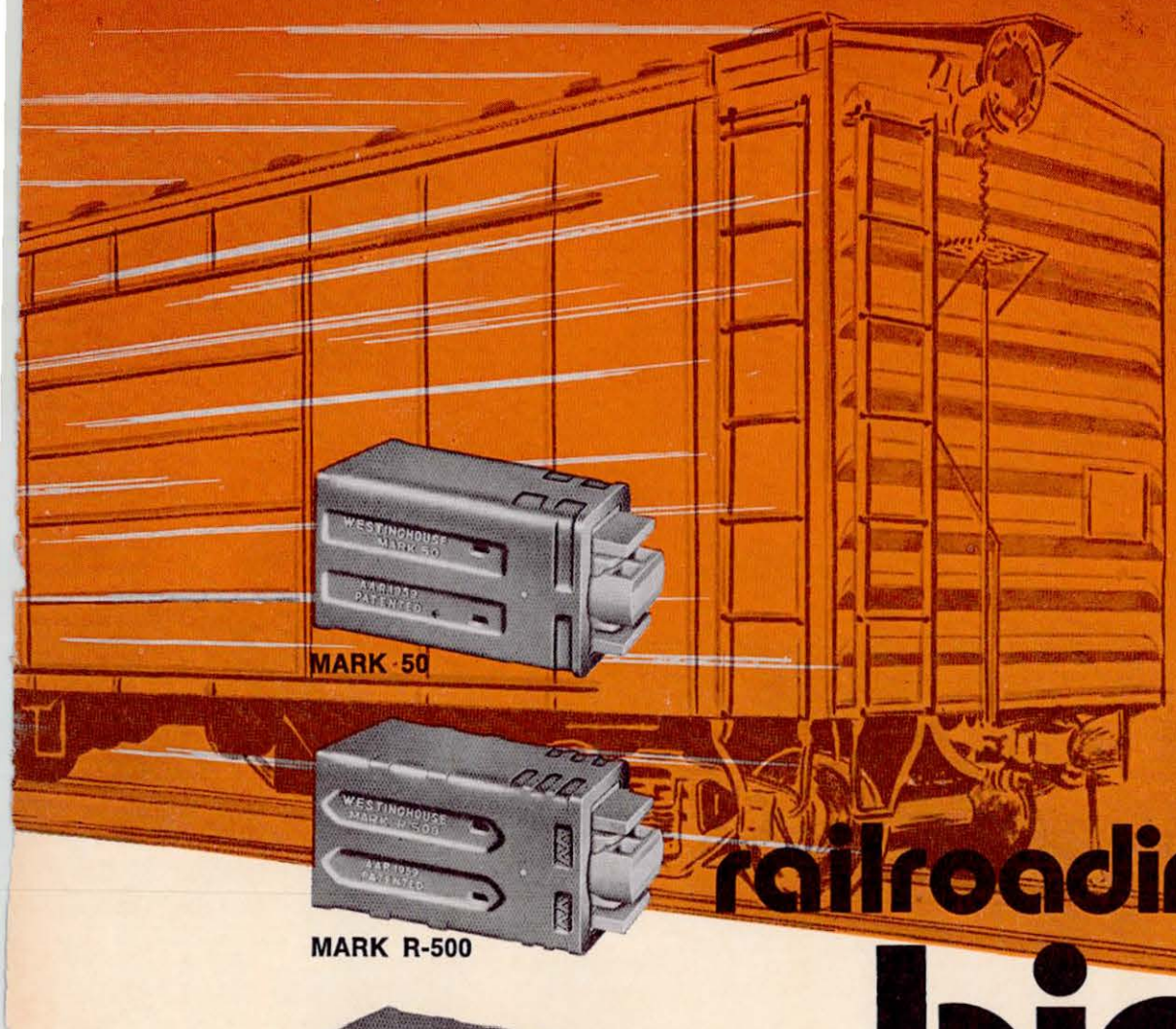
MOVING PEOPLE

GAS TURBINE CARS FOR MTA

New York's Metropolitan Transportation Authority has received a DOT grant of $7.4 million for the development and testing of eight combination gas turbine/electric commuter cars. A matching local contribution will be provided jointly by MTA, the state of New York, the Garrett Corp., and General Electric Co. The 46-month, $14.8-million project is to produce equipment capable of third-rail tunnel operation and equivalent self-propelled performance in non-electrified territory. "We look upon the combination gas turbine/electric-powered commuter car as comprising the trains of the future for suburban rail commuters," commented Transportation Secretary John A. Volpe.

PITTSBURGH GETS $60 MILLION DOT GRANT

The largest single grant ever made by DOT's Urban Mass Transportation Administration—$60 million—went last week to the Port Authority of Allegheny County. The new money, supplementing an earlier $8.7-million grant will help to fund a $228.5-million project to construct a new-type rapid transit line, two rapid transit busways and to rehabilitate two existing rail transit lines. DOT Secretary John A. Volpe announced the grant in a keynote speech opening the Fifth International Conference on Urban Transportation in Pittsburgh. Another speaker, Vice President Spiro Agnew, disclosed that UMTA will have a fiscal 1972 budget of $900 million.



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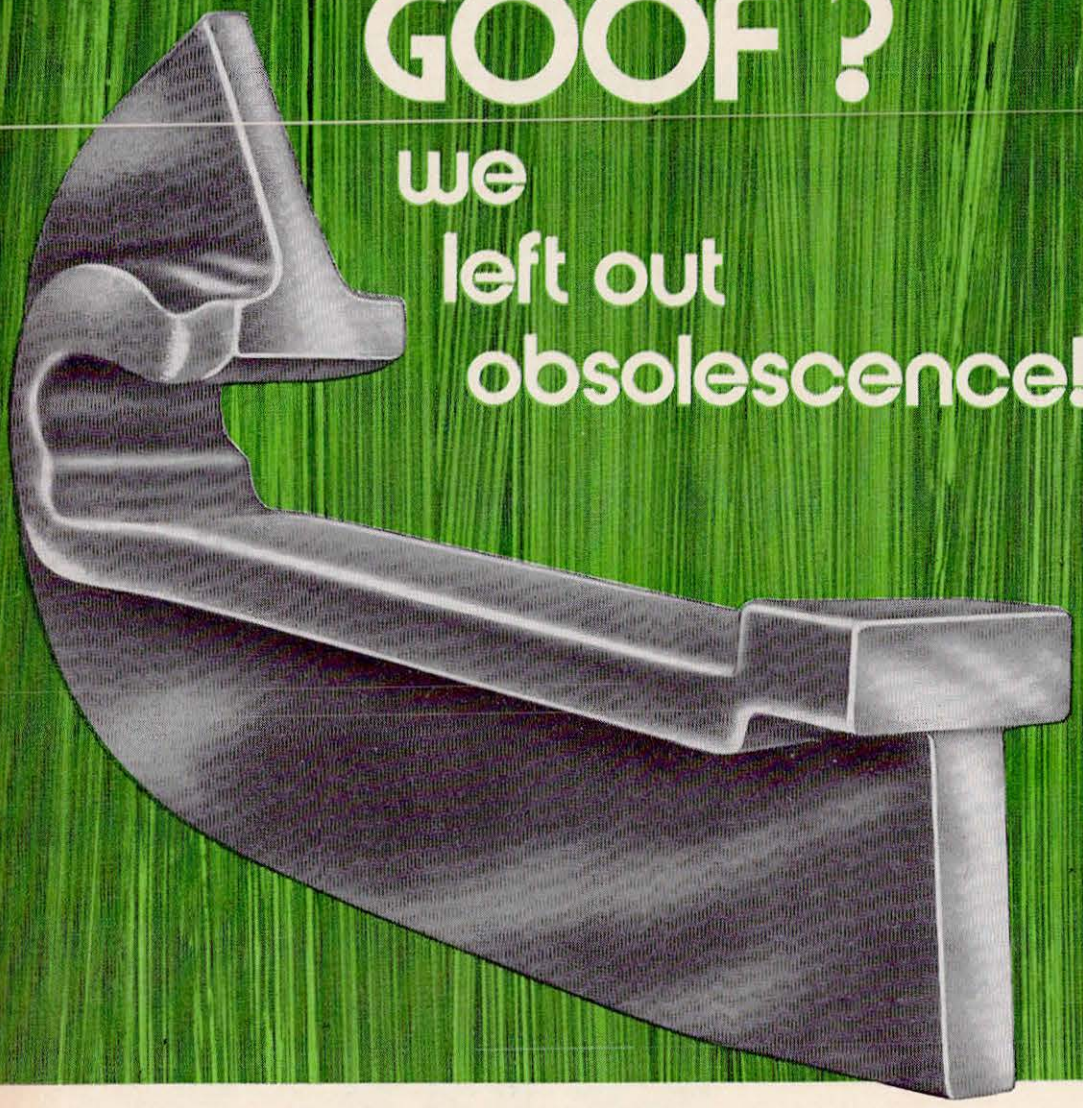

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Support ASTRO for America's Railroads

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Rails, trucks, waterways unite in support of transport bill

Gregory S. Prince called it "an historic occasion." It was precisely that—the unprecedented coming together of the railroads and the regulated motor and water carriers in support of a single, comprehensive piece of legislation, the Surface Transportation Act of 1971.

At a three-way news conference in Washington Sept. 2, leaders of the three modes—Prince, executive vice president of the Association of American Railroads; William Bresnahan, president of the American Trucking Associations; and John A. Creedy, president of the Water Transport Association—made it clear that their coalition in support of S. 2362 and H.R. 10146 is no mere "front" designed to impress Congress. Each pledged an active and enduring fight to see the bill enacted by the present Congress.

Replying to a question from the floor, Bresnahan readily conceded that the legislation is heavily weighted to meet the needs of the railroad industry. A year ago the truckers might have adopted a "dog in the manger" attitude toward any such bill, he said.

"But we believe we are acting in enlightened self interest," Bresnahan added.

Creedy cut to the heart of the matter: "Basically, what we are talking about is nationalizing the railroads. We are against that."

Prince outlined the major points of the legislation:

"First, it would create a new division within the Treasury Department to extend aid by way of loans and loan guarantees to ailing carriers whose essential services the public must have. It's modeled on the Reconstruction Finance Corporation, from which the government ultimately realized a $100-million profit on transactions involving railroads alone. It would provide up to $5 billion in loans and guarantees, with no single company being eligible to receive more than 15% of the total. Provisions to protect the public and insure repayment of loans are included.

"Another important provision would prohibit discriminatory state and local taxes on transportation property. Such discrimination does exist, as every study has shown. The Senate Commerce Committee found last year that such practices were costing railroads alone some $70 million annually. Certainly this practice constitutes a severe burden on interstate commerce and can no longer be countenanced.

"Also included are tax incentives to encourage equipment acquisition. Restoration of the investment tax credit at an initial 10% rate for two years, with a later reduction to 8%, is part of the bill. This varies somewhat from President Nixon's plan to restore it at 10% for one year and then to reduce it to 5%. But transportation is in particular need of the extra incentive provided in this bill. Five-year amortization of equipment costs—now enjoyed only by railroads—would be extended to other regulated carriers, and present restrictions on its use would be lifted.

"The bill would also expand Federal programs for protecting the public at highway grade crossings. With some 1,500 people currently dying each year at such crossings, this is of particular importance to the public. The bill would require state and local governments to use at least half of the Federal funds now available for grade-crossing improvements. Less than a third of such funds are now spent. Restrictions against use of this money on state and local roads would be removed.

"In the regulatory area, abandonment procedures for little-used, uneconomic rail lines would be eased. Specifically, abandonment would be permitted within six months of application on lines where revenues fall short of equaling out-of-pocket costs. This would lead not to wholesale abandonment of lines, but rather to a long-overdue rationalization of rail plant, freeing money lost on unnecessary operations to be used for essential purposes.

"The bill would also extend regulation to movements of livestock and certain processed agricultural commodities which are now exempt when performed by motor carrier . . . .

"Other provisions deal with rate standards and the publication of rates by water carriers in bulk commodity movements.

"A final provision would extend to the Interstate Commerce Commission a budgetary status consistent with its functions as an arm of the Congress—that is, it would have the right to submit its budget directly to Congress."

Price noted that the legislation, for various reasons, omits certain segments of the railroad industry's ASTRO program. "Our need is now," said Prince.

"We have gone for the achievable rather than for legislation that would require several years of simmering on the back burner."

"Our need is now . . . We have gone for the achievable."

—Gregory S. Prince
Association of American Railroads

"We believe we are acting in enlightened self-interest."

William A. Bresnahan
American Trucking Associations

"What we are trying to prevent is nationalizing."

John A. Creedy
Water Transport Association

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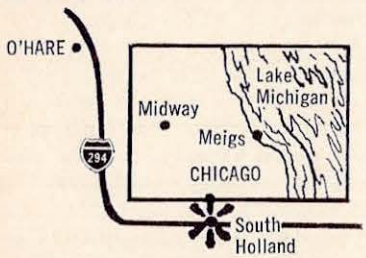
W. H. Thompson
President

ACI Systems Corp.



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RI merger mystery is serialized

And yet another chapter—or, more accurately, volume—has been written in the tale of the Rock Island merger case. A 717-page report by the Interstate Commerce Commission on the bitterly-contested case, which affects in one way or another just about every railroad in the Midwest and West, was released Sept. 1. This first volume, which in all likelihood will be followed by two more equally big ones, deals primarily with the merits of a Chicago & North Western takeover of the Rock Island.

In a synopsis of the voluminous report released over a year ago, ICC Examiner Nathan Klitenic recommended rejection of the C&NW bid, favoring instead a merger of the Rock Island with the Union Pacific, with sale of Rock Island's southern properties to the Southern Pacific. A UP/RI merger would give UP a direct connection with such key points as Chicago, St. Louis and the Twin Cities. The C&NW is now a major beneficiary of UP interline movements.

The Rock Island merger plan is over eight years old. Industry observers feel that once all the volumes in the report have been reviewed by all members of the ICC, the examiner's recommendations will be accepted. After that, however, the case will probably be contested further, thus again delaying a final decision.

Louis Armand, 66, dies in France

Louis Armand, who was perhaps the world's best known railway man, died in his sleep Aug. 30 at his vacation villa in Villers sur Mer, France. He was 66 years old. Armand was president of the French National Railways (SNCF) in the postwar years and later served as chairman of the board. For several years prior to his death he served as head of the International Union of Railways (UIC). He also served for a time as chairman of Euratom, the European Common Market's atomic energy agency. A hero of the French resistance in World War II, and a member of the French Academy, Armand achieved such prominence that he was at one time mentioned as a possible successor to President de Gaulle.

Following his vacation, Armand had planned to make a trip to Washington for conferences with U.S. railroad and government officials.

ICC examiner backs C&NW purchase

Although it "very likely is latent with unforeseen imperfections," the plan for the sale of the Chicago & North Western to its 14,000 employees is a valid one and should be approved, Interstate Commerce Commission Examiner Edward J. Reidy said in his report Sept. 2 on the purchase application. His finding in the case, which still must be reviewed and acted upon by the full Commission and then perhaps will be tested in court, is noteworthy for a lot of reasons.

Not the least of these is the speed with which it was handled, especially in light of its unusualness. It was only back on Oct. 5, 1970 that the North Western Employees Transportation Corp. (NETCO), headed by Larry Provo, president, signed an agreement with the C&NW, also headed by Provo, for purchase of the road's transportation assets.

Immediately thereafter, the plan was filed with the Interstate Commerce Commission. It called for, among other things, the employee group to pay $19 million over a 20-year period and also assume the road's debt, reported to be about $415 million.

Last year, C&NW earned approximately $1.5 million, a vast improvement over 1969 when losses amounted to close to $15 million.

Earnings this year should be even better, according to a railroad spokesman, and may come close to the $7-million mark.

Although NETCO officials are not permitted to discuss details of the purchase plans with employees until the ICC approves the corporation's prospectus, groundswells indicate that perhaps 2,000 employees, or one-seventh of the employee force, would be interested in participating in the stock purchase plan.

An earlier survey of principal officers of the Chicago & North Western showed that 37 out of 39 questioned would subscribe for more than $900,000 in stock.

Some opposition to the employee ownership plan was voiced when it first was announced—from the Union Pacific and the Illinois Attorney General's office—but this has since faded, leaving very little standing in the way of the purchase outside of ICC approval. Among Reidy's recommendations, however, was one calling for the railroad's parent, Northwest Industries, to make certain financial assurances to protect the new enterprise. Such assurances, at least of the scope recommended by the ICC examiner, were not in the original plan.

TurboTrain tour: "The crowds went wild"

The Department of Transportation's TurboTrain has completed a month-long, 12,000-mile tour of 31 states—and DOT couldn't be happier with the results. "The interest in this train was just fantastic," says one DOT official who went along for the ride. "The crowds went wild." The tour was officially described as an endurance test as well as a public demonstration run—in DOT's words, "the first major joint effort by Amtrak and DOT following Acts of Congress designed to revitalize intercity rail passenger service."

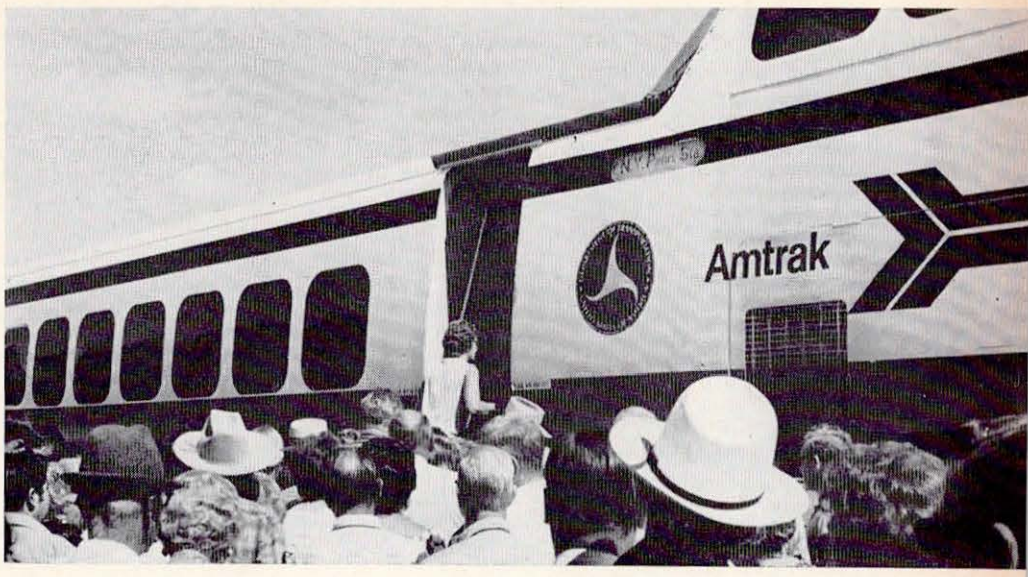
There was no doubt, as the TurboTrain headed back to New England last week, that it had revitalized interest in rail passenger service.

The reaction in Arizona was typical. Said the Arizona Daily Star (Tucson): "If the turnout of more than 5,000 people in 95-degree temperatures yesterday was an indication, the answer is unequivocal: Yes, people can be lured back to the trains."

The Phoenix Gazette agreed: "If yesterday's performance in Arizona can be used as a yardstick, the funeral for the nation's railroads is still a long way off and the Amtrak TurboTrain may be the new breath of life for them."

Said the editor of the Yuma Daily Sun: "Even at 70 (slow) it is a pleasure to ride TurboTrain. Hopefully it will be enough fun for enough people so that railroad travel will once again become part of our lives."

Willis Copeland, one of three Penn Central engine foremen on the tour, said the Southwest was an ideal testing ground for the TurboTrain: "There's less wear and tear on a train like this out here. In the East you're continually braking to control your speed through cities and around a lot of tight curves."



DOT asked TurboTrain riders to complete a four-page questionnaire. Sample questions: How long has it been since you last rode a non-commuter train? If a modern train such as this were operated in this area with running times reduced by 25% from the current train schedules, would it make train travel more attractive for you? Over a distance of 250 miles, if the fare is now $10 on a regular train, would you be willing to pay $12 for a train like the TurboTrain with a faster schedule?

Materials managers form new group

There may be a new avenue for improved communication among various modes of transportation—through the organization of the Transportation Materials Management Forum. TMMF is now in its formative stage, and present membership is from the ranks of railroad purchasing and materials-management officers. But the objective is to create a forum for all modes.

President of the new group is Harold M. Hoffmeister, vice president-purchases and materials, Missouri Pacific.

DOT figures the market for commuter and transit cars

Everybody is talking about the growing market for rail commuter and transit cars. But just how big is the market? DOT's Urban Mass Transportation Administration has done its own arithmetic, and come up with a "total effective demand" of 3,956 cars in the next 3½ years.

This figure includes 1,202 cars now on order; 311 cars for which UMTA has made capital grants but for which contracts have not yet been signed; and 2,443 cars which UMTA is reasonably certain will be ordered by Dec. 31, 1974. The breakdown:

Now on order: 1,202 cars

Number	Type	For Service on:	Builder
152	Commuter	Long Island	General Electric
144	Commuter	New Haven	General Electric
128	Commuter	Harlem & Hudson	General Electric
300	Transit	New York City Transit	St. Louis Car
52	Transit	Staten Island Rapid Transit	St. Louis Car
130	Commuter	Illinois Central	St. Louis Car
250	Transit	BART	Rohr
46	Transit	PATH	Hawker-Siddeley

Near contract stage: 311 cars

Number	Type	For Service on:	Builder
44	Transit	MBTA	—
144	Commuter	SEPTA	—
45	Commuter	N.J. DOT	—
78	Ltd trams	S.F. Muni	—

Due by Dec. 31, 1974: 2,443 cars

900	Transit	New York City Transit	—
60	Commuter	Long Island	—
150	Transit	Chicago Transit	—
124	Transit	PATH	—
98	Transit	Lindenwold (DRPRA)	—
200	Transit	BART	—
300	Transit	D.C. Metro (WMATA)	—
100	Ltd Tram	MBTA	—
135	Commuter	Penn Central	—
220	Commuter	Erie Lackawanna	—
25	Commuter	Illinois Central	—
20	Commuter	CSS&SB	—
25	Commuter	Burlington Northern	—
36	Commuter	Milwaukee Road	—
50	Commuter	Rock Island	—

Roadmasters, B&B meet in Chicago

This year's concurrent meetings of the Roadmasters' and Bridge & Building Associations will be held in Chicago's Conrad Hilton Hotel, Sept. 13-15. Joint sessions are scheduled for the mornings of Sept. 13 and 14. Separate meetings are programmed for Monday afternoon (Sept. 13), Tuesday afternoon (Sept. 14), and Wednesday morning (Sept. 15).

The annual banquet, sponsored by the Railway Engineering-Maintenance Suppliers Association, will be held in the Grand Ballroom on Tuesday evening (Sept. 14).

A list of scheduled events follows:

Joint sessions—The Sept. 13 morning meeting will hear addresses by J. H. Lloyd, executive vice president, Missouri Pacific ("Railroads of tomorrow—on the way today"); J. E. Rourke, director, Office of Standards, Federal Railroad Administration ("The new Federal safety standards"); and by D. D. Strench, operating vice president, Louisville & Nashville.

The joint meeting on Tuesday morning will feature addresses by John S. Reed, president, Atchison, Topeka & Santa Fe; Clifford Massoth, director of public relations and advertising, Illinois Central ("ASTRO—getting the story told"); and by Dr. Carl S. Winters, inspirational speaker appearing through the courtesy of General Motors ("Opportunity unlimited").

Bridge & Building—This group's Sept. 13 afternoon meeting will open with an address by President A. R. Dahlberg. A report will be heard from Special Committee No. 1—Concrete Filled Pipe Piles, Bents and Piers. Two addresses will follow: by M. H. Frank, president, Lincoln Eelctric Railway Sales, Inc. ("Structural shelf-shielded field welding using flux-cored electrode wire"), and by Tom S. Carter, vice president, Servitron, Inc. ("How a bridge was 'launched' across the Arkansas River").

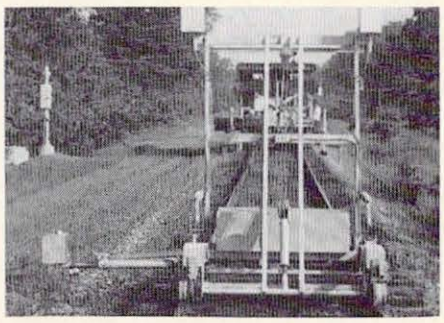
The Sept. 14 afternoon session will include reports from Special Committees No. 2 (Recruiting of Qualified Personnel into B. & B. Departments), and No. 3 (Bridge & Building Inspection Reports and Forms). There will also be a panel discussion on "Glued laminated timber—a reliable engineering material," and an address by T. A. Reynolds, assistant division engineer, Penn Central ("The flame-shortening of diagonals in truss bridges").

Two addresses will be heard during the Sept. 15 morning meeting: by Norman A. Liver, vice president and foundation engineer, Lee Turzillo Contracting Co. ("Problems in overcoming slides and scour of bridge foundations"), and by C. W. Bermingham, president, Berminghammer Corp., Ltd. ("Pile-driver leads with vertical travel, other features").

Roadmasters—An address by President W. E. Laird will open the Sept. 13 afternoon session. Reports will be heard from Special Committees No. 1 (Deferred Maintenance—Extent Possible and Economic Effect), No. 3 (Desirability of Uniform Standards, Track Materials, Etc.), and from Standing Committee No. 1 (Machinery).

The Sept. 14 afternoon session will receive reports from Special Committees No. 2 (Non-Conventional Track Structures), and No. 4 (When and How to Timber and Surface Locations Having CWR to Avoid or Minimize Expansion or Contraction Problem). There will also be a report on the modern construction system of track used in Mexico.

Reports will be heard from two standing committees during the Sept. 15 morning session: No. 2 (Track), and No. 3 (Roadway).



Device corrects curves automatically

A device that automatically causes curve alignment to be corrected according to a graph superimposed on a previously made tracing of the curve is now available. The device, called the Auto-Graphliner, is used in conjunction with the Autojack Electromatic Tamper manufactured by Tamper, Inc., West Columbia, S. C.

The Auto-Graphline automatically records track alignment graphically and then makes the proper track corrections from the corrected graph without, it is said, reducing the production of the tamper. The attachment includes a recorder which has a drive mechanism for both a stylus and graph paper on which the alignment is recorded. After a graph of a curve has been made a corrected alignment is indicated on the graph by means of special tape.

Carol Mine Railway plans expansion

Labrador's Carol Mine Railway, the world's first fully-automated multiple-train rail freight operation, is due for extension and modernization. The 10-year-old railway, which presently has six miles of single track line, will be double tracked and extended more than a mile and a half to include a third ore loading pocket. Ore handling capacity, originally 55,000 long tons per day, will be greatly increased, both by the double-tracking and by extending the automatic facilities to permit simultaneous, crewless operation of seven ore trains instead of four as at present.

General Railway Signal has received an order from the Iron Ore Co. of Canada to furnish engineering and equipment for the new program.

All locomotives, now electric instead of the original diesels, will have on board automation equipment linked to the wayside system by high-frequency, jointless, electronic track circuits, as well as by special communicating techniques where precision maneuvers are required, as at the loading and dumping areas. Any locomotive that becomes incapacitated will immediately report its conditions, via space radio, to the central monitor room where the location and progress of trains are displayed.

KC terminal due for redevelopment

Kansas City may be the next major U.S. city to get a whole new city-within-a-city development, on property once used exclusively for rail passenger operations. Plans were announced June 30 for a $275-million development of the 54-acre Union Station area, which lies a short distance from the heart of Kansas City's central business district. As a first step, Kansas City Terminal Railway has named Turner, Bailey & Zoll, Inc., of Chicago, and John A. Moore & Kessinger & Co., Inc., of Kansas City as exclusive real estate agents. Their immediate goal: To locate a company or group of companies to undertake the project, and to make all arrangements between the principals involved. One proposal for development of the property would include construction of a two-level shipping center (with shopper and revenue parking), five high-rise office buildings and several apartment buildings. A new rail passenger station would be part of the complex, as would a station for a proposed rapid-transit system.

C&NW moves quickly on extending runs

Chicago & North Western is wasting no time in implementing interdivisional run rules (RA, Aug. 9, p. 13). Crews are now operating through traditional terminals on 22 daily freight runs, and President Larry S. Provo says management/union task forces are now working out details for near-future expansion of interdivisional runs over the entire railroad. On most of the runs now being operated, one crew has replaced two; the exception is the Chicago-St. Louis operation, where two crews have replaced four.

James R. Wolfe, C&NW vice president-labor relations and staff services, says railroad/union cooperation in implementing the rules "is bringing widespread benefits to our customers, to the employees and to the railroad." Service has been speeded up; with the elimination of a crew change on the Chicago-Green Bay run, for example, C&NW is reporting an average saving of three hours per trip.

As for employee gains, Wolfe notes that "the longer runs, which permit crews to earn their wages faster, and with less time at terminals away from home, have made the crew jobs extremely attractive."

"Clarification" of UTU contract asked

The United Transportation Union is playing it close to the vest, so far as ratification of a proposed wage/rules pact is concerned—with President Charles Luna determined to have further talks with government and railroad officers on the "status" of the agreement. Ratification ballots have been tabulated, but UTU isn't talking about the results. Instead, Luna is telling the membership that "I am now in a position to go back to the table for clarification of the proposed agreement . . . At this time, my concern is to determine with the proper government authorities if the agreement remains the same as it was when it was tentatively accepted after the series of selective strikes."

UTU's main problem apparently centers on interpretations of President Nixon's wage/price freeze. Earlier, it had been indicated that if UTU ratified the agreement, members would be able to collect on a retroactive increase dating from last April (RA, Aug. 30, p. 10). But, a further increase, due Oct. 1, would appear barred by the freeze.

Lines on Labor

GUS WELTY

MOPAC TAKES ANOTHER "VOTE"

Do railroad employees appreciate a no-nonsense approach to intra-company communication? At Missouri Pacific, at least, apparently they do. MoPac has now completed its second employee-opinion survey—with results remarkably like those obtained in the first poll (RA, Jan. 11, p. 20). Over-all, the results add up to a healthy vote of confidence in the company's communications program—especially the formalized part of the program represented by "MoPac News."

A FEW OPINION-SHIFTS—BUT NOT MANY

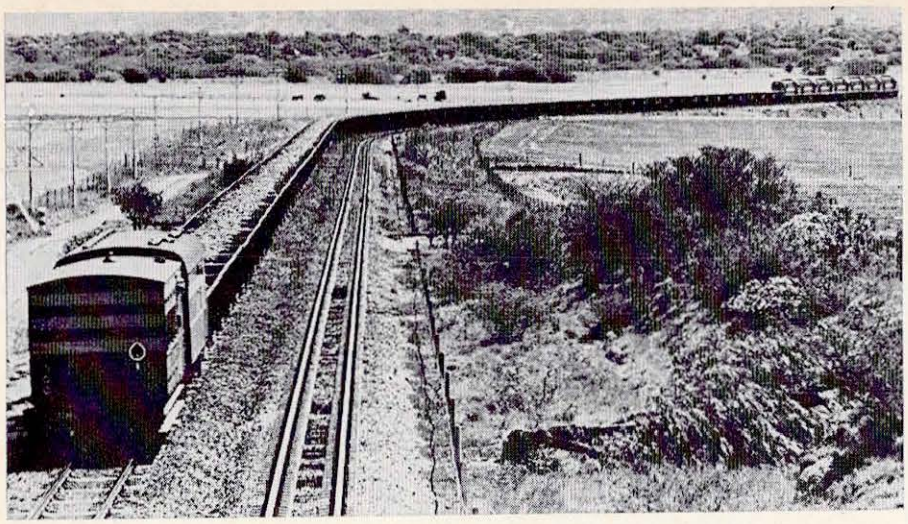
As in the earlier survey, MoPac used a 10% sample, generated by the computer from payroll records. Both times, the response was about the same, in the 25% range; so was the breakdown between union and non-union employees, roughly four-to-one. With a couple of exceptions, the questions were the same. Significant differences in the second group's responses came in only a few areas: (1) There was a 9% drop in agreement with the statements that "Company management seems interested in what I think about MoPac" and that "My supervisor is interested in my ideas;" and (2) there was a 12% shift from disagreement to neutrality on the statement that "Most of the information I get from the company is just propaganda." Across the board, employees indicated a hunger for knowledge about their company's policies and operations and about the positions MoPac takes on issues affecting railroading. As before, "MoPac News" got high marks as an information source: (1) There was a 6% shift from agreement to neutrality on the question of whether most published material is of interest, but the publication still came in with an 81% approval rating: (2) agreement rose from 40% to 46% on the statement that the "News" provides "most of the information I need to know about MoPac;" and (3) as a primary source of reliable information, "MoPac News" came in first among union employees and second only to supervisors among non-union personnel.

EDITORIAL POLICIES: EMPLOYEES APPROVE

In recent years, MoPac's employee publication has stressed "hard news" and downplayed the folksy kind of material that fills many a page in a number of other house organs. And the readers seem to agree that it has been a good idea.

Last year, "MoPac News" was described as "a reliable source of information," and the agree-disagree-neutral scores were 73%-9%-18%. This year, the statement was rephrased to "the most reliable source of information," and the breakdown was 53%-22%-25%—a remarkable showing in view of the many and varied information sources available to an employee. Last year, what might be termed "personal" news got an 87% favorable response. This year, with the statement made specific to include "employees, their families, marriages, babies, bowling and golf scores," the favorable response dropped to just 32%, with 39% expressing no interest and 29% not caring one way or the other.

Maybe it could all be summed up in two sentences: The employee wants to know. MoPac is helping him learn.



ORE TRAIN moves over high-capacity narrow-gauge route to Port Elizabeth on the Indian Ocean. SAR is striving to increase capacity of numerous routes.

SAR Blue Train: Color it red

Johannesburg

South African Railways' "Blue Train" from Johannesburg to Cape Town is surely among the world's finest. You can fly between the two cities in less than two hours; the Blue Train takes 26 for the 956-mile run. But on the Blue Train, as the Cunarders say, half the fun is getting there.

Blue Train cars are painted blue, with the quality finish of a new Mercedes-Benz. All other SAR passenger stock is red. Despite the limitations of a 3½-foot gauge, cars are over eight feet wide and sleeping accommodations are equal to the best in Europe or America. The dining car is luxuriously appointed, with a cuisine that would satisfy even the late Lucius Beebe (and that is going some). Prices are substantially below those of South African hotels and restaurants offering comparable service.

But SAR is much more than the Blue Train, which is really a show window for the railroad and a big loss leader. SAR is an economic and industrial giant—an enterprise second only to the government itself in the South African economy. The system comprises 13,731 route miles, 2,633 electrified, over which SAR moved a record 37 billion ton-miles in fiscal 1969-70. Capital investments for the year ending March 31, 1970, stood at more than two billion Rand—approximately $3 billion U.S.! Railway operations produced a deficit of Rand 25.3 million (about $36 million), down from Rand 29.7 million the year before, and after a special subsidy of about Rand 12 million for operation of certain suburban services. Those services, incidentally, handled a record 487 million passengers in the last fiscal year, up 5% from the year before.

SAR has car shortages, too. While the railway has received accolades from the agricultural sector for the movement of emergency feed and water, and trans-shipment of livestock during a recent severe drought, the industrial sector blames the railway for its inabiliity to increase production, and the mining industry says car shortages limit export. By no means unmindful of this situation, SAR included 6,347 new freight cars in its 1971 equipment program. Included are covered hopper cars, mechanical refrigerator cars, high capacity tank cars, and double-decked rack cars for new auto transport, all in addition to more conventional equipment such as the 63-ton drop-side gondola cars which constitute the workhorses of the system's large freight-car ownership.

South Africa has a carbuilding industry to fill the railway's demands. Several modern shops are turning out high-quality equipment, with almost all of the components and accessories locally produced, and with an export capacity besides.

Electric locomotives are produced locally, but expanding requirements for high horsepower diesel-electrics are being met by U.S. builders.

Back to the Blue Train—a new set of equipment is on order to replace the 30-year-old sets now in service. No holds have been barred in designing the cars to match and surpass the finest passenger stock now in service anywhere in the world. When the new train is inaugurated next July, the older cars will replace conventional equipment on the Trans-Natal Express, operating overnight between Johannesburg and Durban. The blue cars will be repainted red.

Robert G. Lewis

"Commoditrain" gets union go-ahead

On Chicago & North Western, they're called "commoditrains" — single-commodity unit trains operated by three-man crews in the kind of service that produces top utilization of manpower and equipment. Special agreements with the United Transportation Union and the Brotherhood of Locomotive Engineers were needed to get the service started—and the special agreements were obtained, on a 60-day experimental basis.

North Western's first commoditrains are hauling sand and gravel from South Beloit, Ill., to construction supply companies at three locations (Des Plaines, Cragin and Elmhurst) in the Chicago area. Each of two trains (of approximately 25 cars each) is scheduled to make three roundtrips per week. Crews consist of engineer, conductor and trainman.

Under the labor agreements, road crews are operating through several seniority districts. They are also spotting loads on consignees' sidings and picking up empties.

As C&NW is operating the service, a crew handling empties departs Proviso Yard and operates direct to South Beloit. After rest, the crew is ordered to South Beloit and departs with its sand and gravel loads. At Des Plaines and Cragin, empties are pulled and loads spotted. The crew then operates to Proviso to set out empties, then to Elmhurst for spot and pickup and finally back to Proviso to tie up.

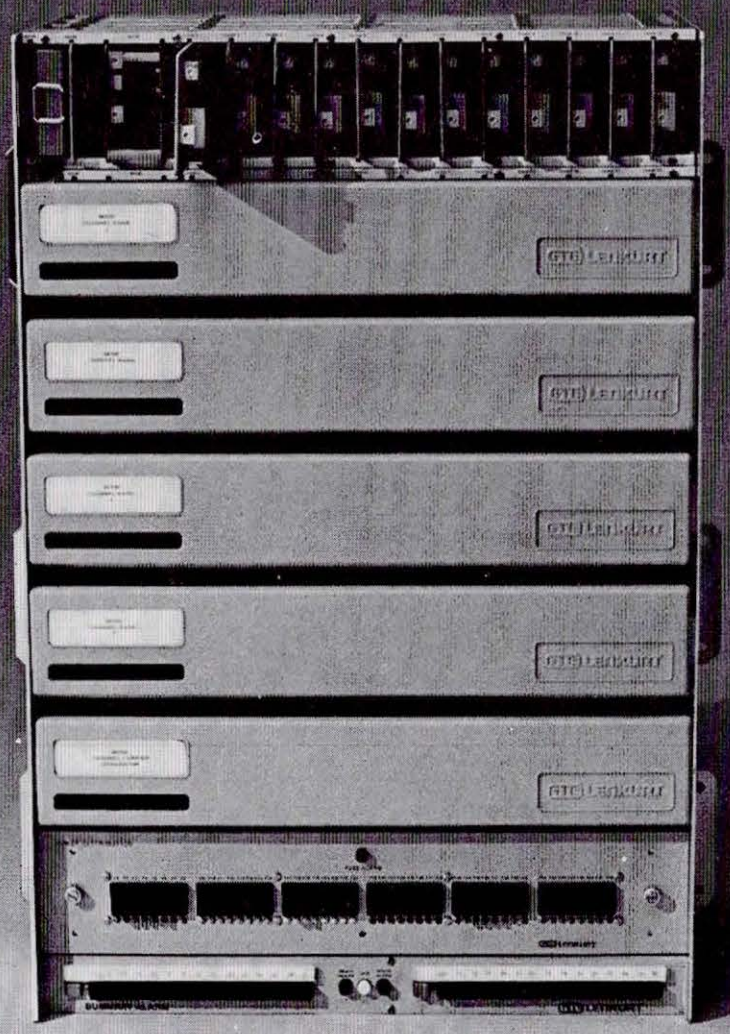
Road crews working under the agreement are in switch run service and are compensated at a special road rate equivalent to the five-day yard rate, with provision for overtime after eight hours. Pay is on a time basis.

Either carrier or union(s) may request cancellation before expiration of the 60-day trial period. If no such request is made, the agreement will stay in effect, subject to change provisions of the Railway Labor Act.

Basing its estimates on comparisons of car-turnaround in normal service and in commoditrain service, North Western is looking for about a 500% improvement in car utilization. Shipper and receivers, C&NW notes, will get faster and more dependable service and greater assurance of adequate car supply—and, says President Larry S. Provo, new business attracted by this kind of service should also create job opportunities for C&NW people.

Commoditrain service, Provo adds, will make it possible for North Western to handle substantially increased volumes of traffic with existing cars.

OUR NEW MUX.



Performance is up. Size is down. Installation is simple. Price is lower.

All things considered, we think our new 46A3 "L" compatible channel bank is the best FDM channel bank on the market today.

Consider price. It's been reduced dramatically. We've lowered manufacturing costs by using advanced techniques like hybrid thick film circuitry and our unique polylithic crystal filters. And we pass the savings on to you, whether you need 12 channels, 60 channels or 1260 channels. Standard deliveries are available now.

Now consider improvements.

First, the basic 60-channel assembly, like the one shown above, is less than one-third the size of its predecessor. In fact, the basic assembly (including channel carrier supply, fuse and filter panel and summary alarm panel) takes up only 15 mounting spaces on a standard 19″ rack. The common equipment in the basic assembly is all you need to expand up to 240 channels on an 8′ rack or 360 channels on a 10′ 6″ rack. Each 60-channel add-on package only takes up 10 mounting spaces since it uses the common equipment in the basic package.

Second, there's simplified installation. Each basic 60-channel assembly and channel add-on package is prewired. To install the basic assembly, just tie the drops down and hook up to your existing equipment. When it's time to add channels, simply repeat the process with the add-on package and use the cable stub we supply to tie into the basic 60-channel assembly.

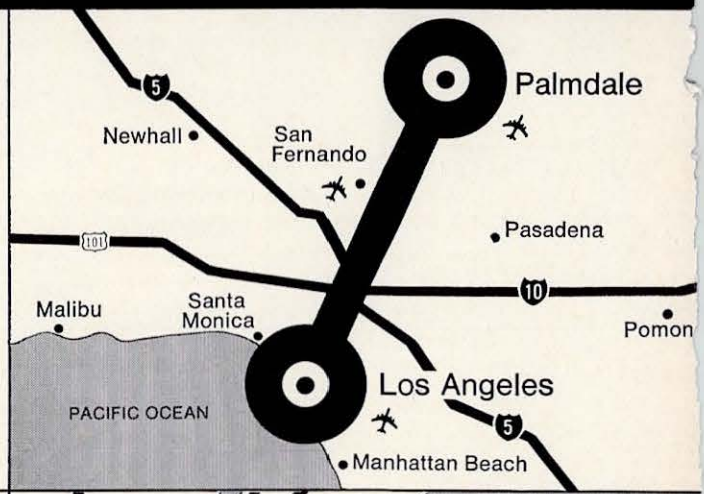
Third, there's improved performance. The figures include an improved VF return loss figure of 26 dB, a reduced typical carrier leak of −38 dB, and a wider frequency response of 250-3450 Hz. The 46A3 channel bank exceeds CCITT recommendations and, of course, is compatible with our own 46A and W.E. "L" muliplex systems.

We know it all sounds too good to be true, so we're ready for your questions. Just phone us: Atlanta (404) 261-8282 / Chicago (312) 263-1321 / Dallas (214) 363-0286 / Falls Church (703) 533-3344 / San Carlos (415) 591-8461. Or write GTE Lenkurt Incorporated, Dept. C720, 1105 County Road, San Carlos, California 94070.

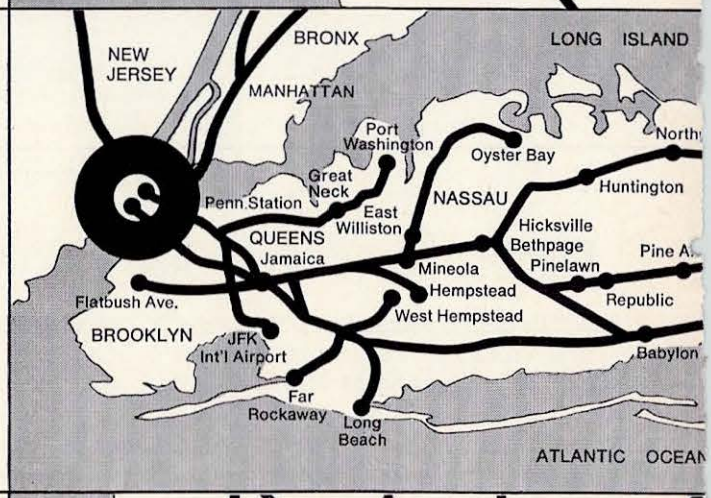
GTE LENKURT

Commuter problems

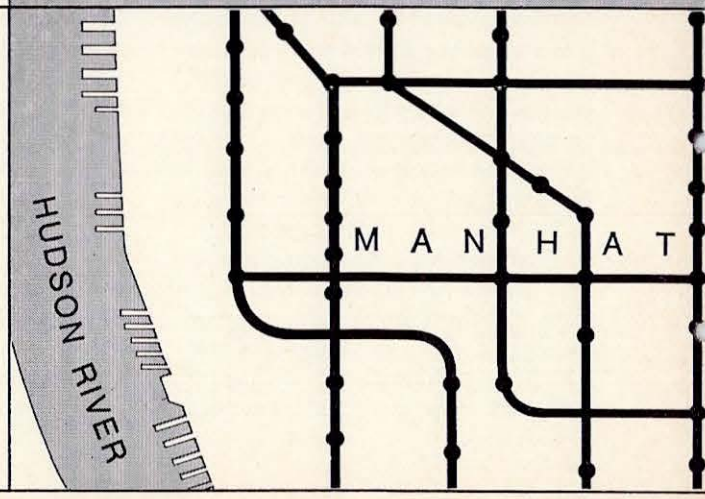
High-speed transportation for inter-city and airport access.



Fast non-stop, urban/commuter service.



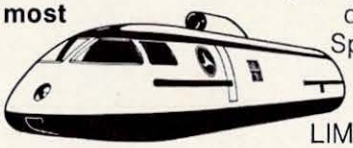
Rapid intra-city, multiple-stop transit.

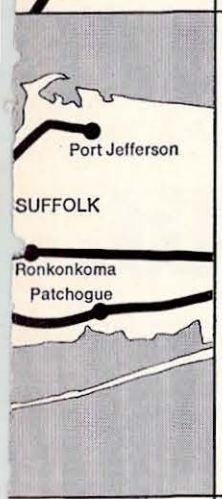


& progress.

Linear Induction Motor

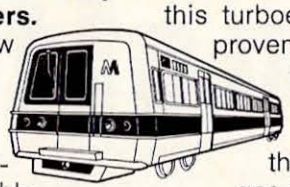
Secretary Volpe rode the Garrett LIM-powered vehicle, designed for speeds up to 250 mph, and said, "The most exciting new development in the entire field of transportation and environmental control." The prime candidate for high speed propulsion is our Linear Induction Motor (LIM). It is virtually noiseless. Being electric, it produces no pollutants. High speed testing is being conducted for the Office of High Speed Ground Transportation D.O.T. at Pueblo, Colorado. Air Cushion vehicles with LIM power are planned to carry passengers between Los Angeles International Airport and Palmdale, California.



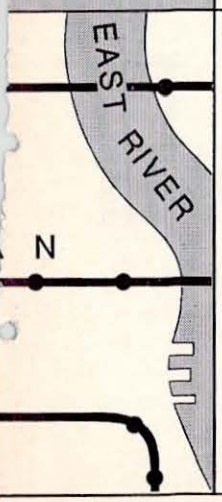


Turboelectric

Our fast, self-powered Turboelectric cars will provide efficient, non-stop service for suburban commuters. Now planned for the Greater New York area our Turboelectric Propulsion System alternates between utility-generated power and onboard, turbine electric power. Automatically. Smoothly. Making fast, non-stop thru-service possible.



First tests of this dual mode system were in 1969 on the Long Island RR. The heart of this turboelectric system is the service-proven, Garrett 831 gas turbine engine which produces little noise and low emissions. The next step will be prototype evaluation on the Long Island RR with the same gas turbine engines installed in the Metropolitan GT-4 cars.



"Stored Energy"

Our "Stored Energy" propulsion system is an immediate answer to intra-city rapid transit. New York City's MTA Chairman Ronan said, "It offers promise of making the entire rapid transit system more pleasant while saving money." New York's Transportation Authority has reason to be enthusiastic about our "Stored Energy" system. Already in the planning and prototype-evaluation stage, it actually reduces subway heat. Brake noise is all but eliminated. Subway tunnels and platforms can be far more livable—at the same time system implementation can save millions of dollars annually in electrical cost.

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GARRETT

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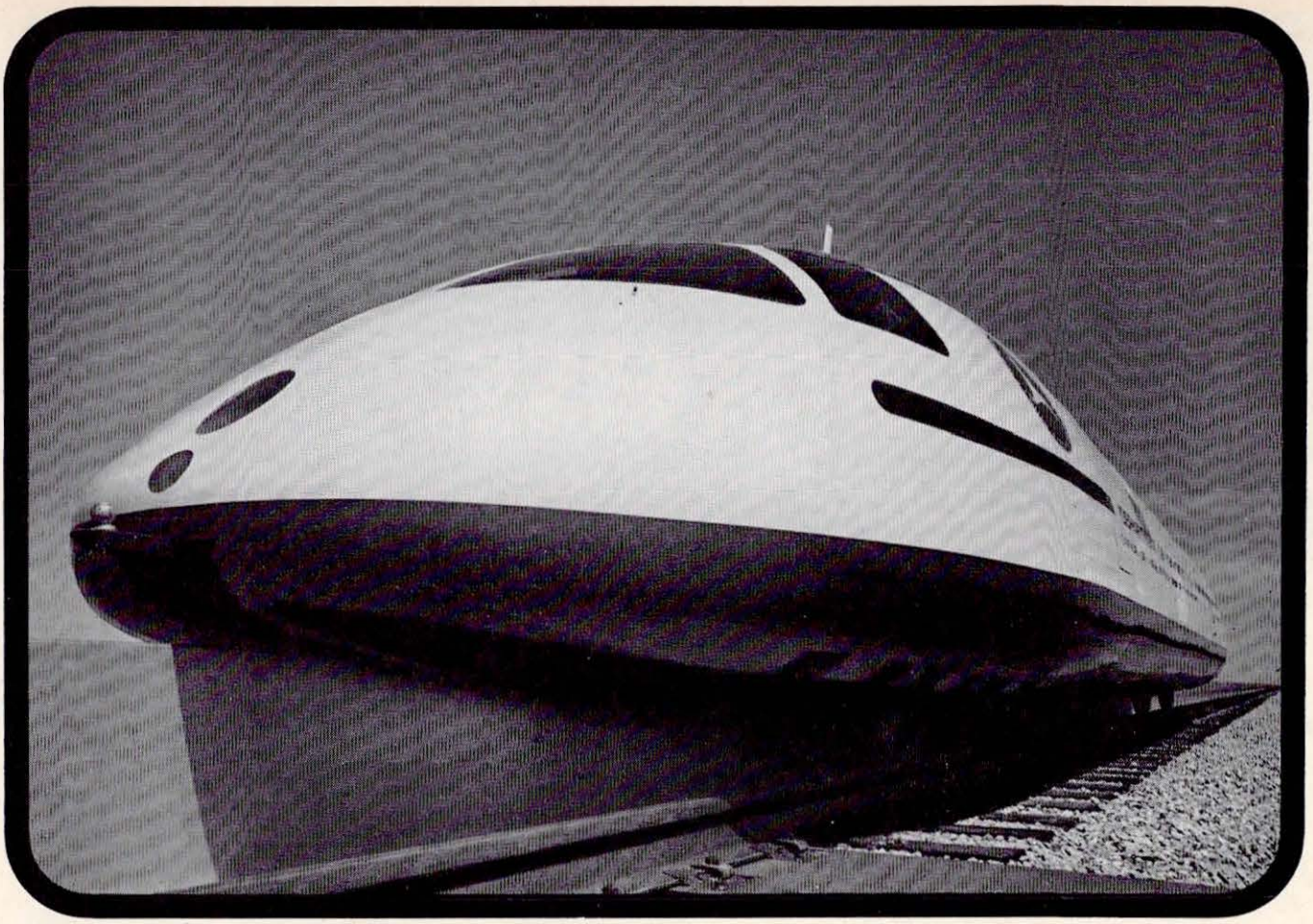

Introducing the train of tomorrow.

This is no UFO. The U.S. Department of Transportation identifies it as its own LIM (Linear Induction Motor) test car. And the way things look, it could give ground transportation a whole new dimension in speed and efficiency.

With a rated speed of 250 mph, this vehicle of the future is propelled by the electromagnetic interaction of its Linear Induction Motor with a conductor fin centered in the track. Between, we might add, CF&I rails specially made to take the high stresses and strains imposed by such brute speed.

LIM testing is one stage of a far-sighted government program to develop transportation that incorporates the privacy and flexibility of an automobile with the safety, high speed and lower pollution levels of rail systems. For our part, CF&I is proud of its involvement in these pioneering efforts. Proud too, that our own Hi-Si rails, Hi-Cant tie plates and accessories were selected to help carry new concepts into reality.

But since we're steel men, we're not about to stop now. We'll keep right on innovating and improving our products for even greater safety and economy. Count on us today. To put you on the right track to tomorrow. **We Serve You Right.**

CF&I STEEL

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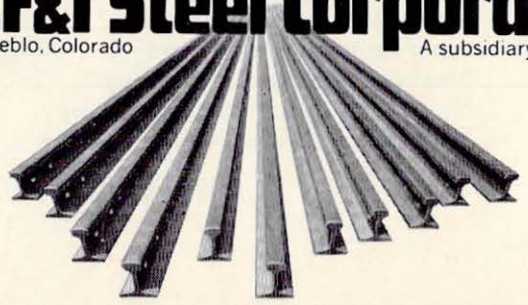

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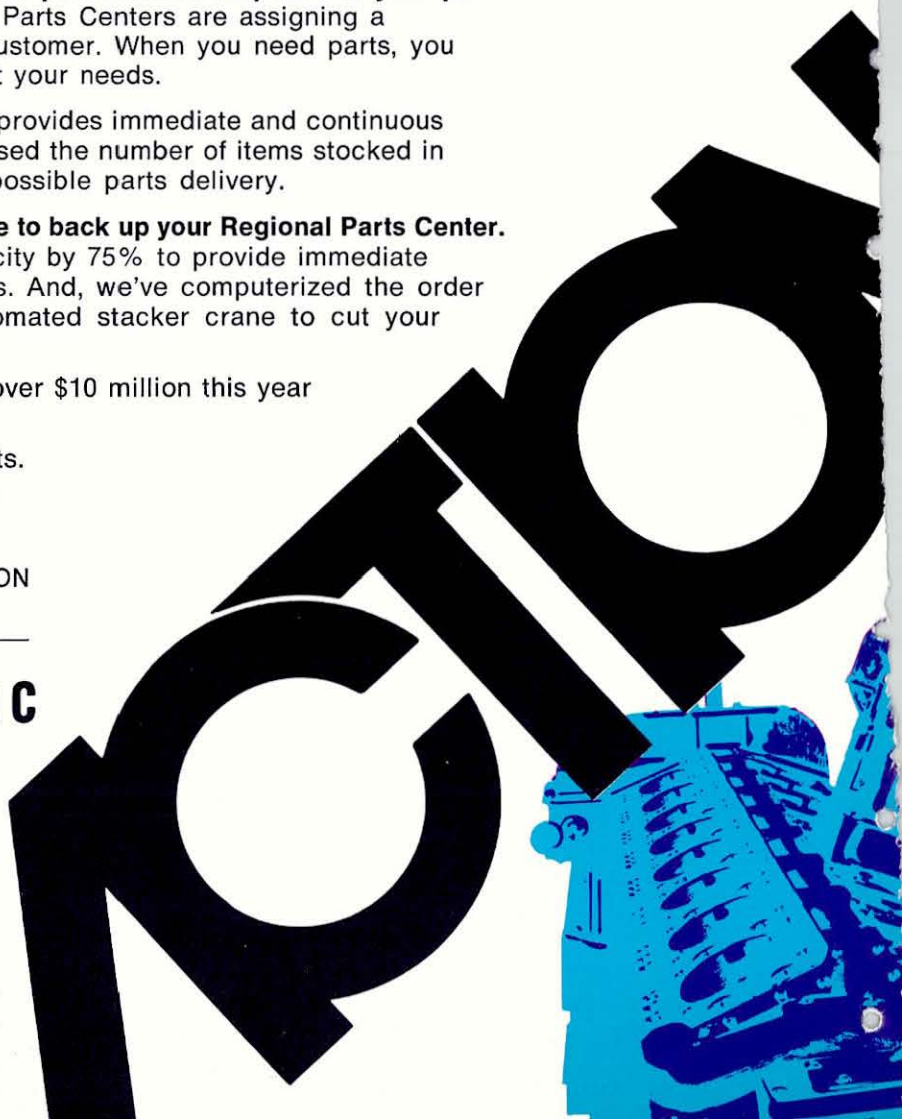

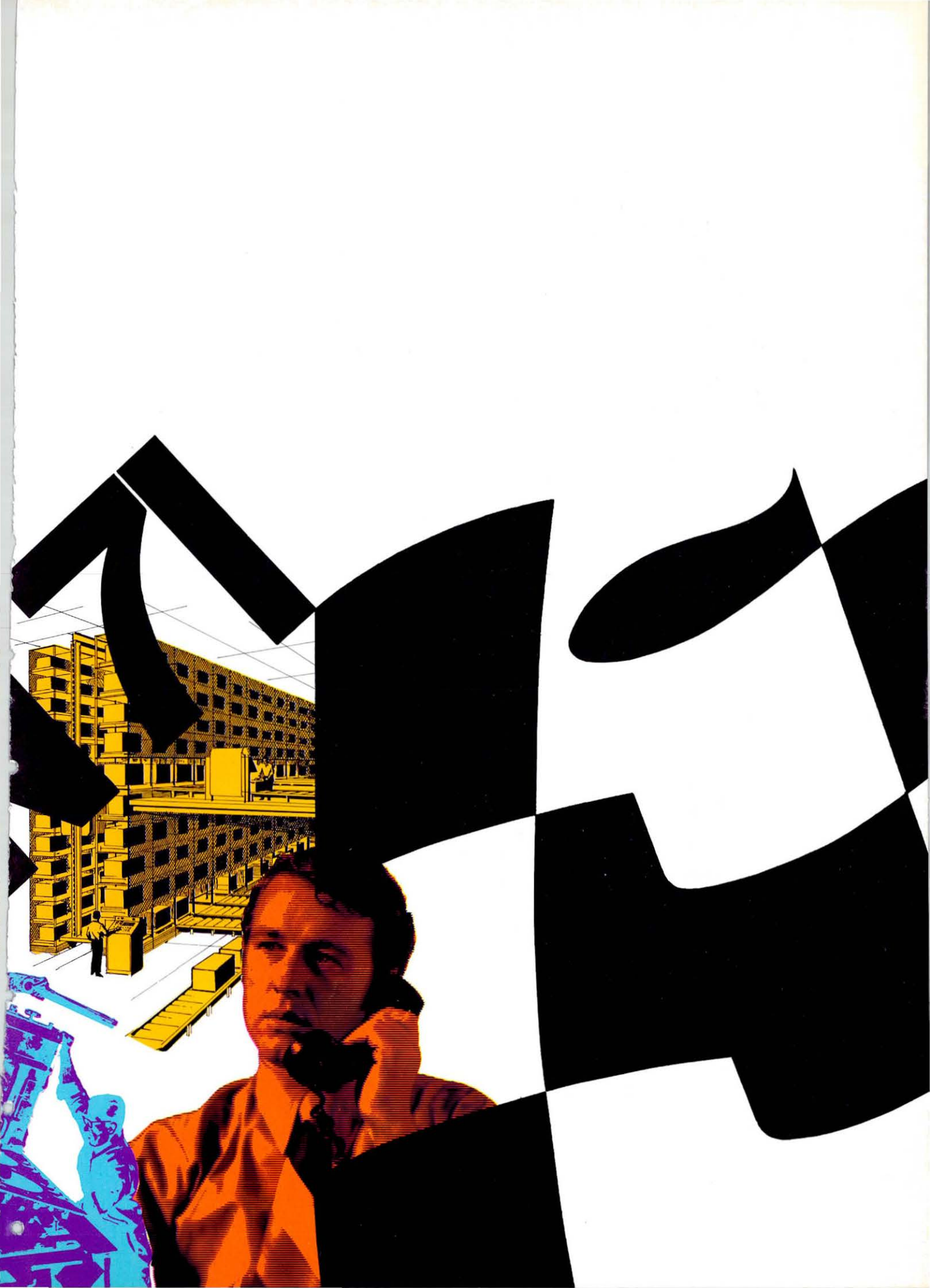

Center plates pass

grinding 17-month test.

No major wear spots or galling showed up on plate maintained with Shell Center Plate Lubricant (see right). Railroads are saving thousands of man-hours and dollars with this unique product.

When the center plate on the right was photographed, it had just completed 17 months on the job for a major road. It was cleaned with an air blower; swabbed with solvent. Look at it! Smooth. No galling. Only minor evidence of wear.

After 17 months of horseshoe bends and S curves; after 68 weeks of rocking and swiveling under loads up to 110 tons, this is really something! Yet, it's typical. We spot-checked the plates of many of the thousands of cars maintained with Shell Center Plate Lubricant and the story was basically the same—effective, long-run lubrication.

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Effective, reliable lubrication is only one of the reasons why so many roads are switching to this Shell product. Material costs are significantly lower because you don't use as much of the Shell lubricant as you do grease or loose pellets. But the greatest saving is keeping expensive, revenue-producing equipment operational. Think about that.

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You really ought to think about these discs for center plate lubrication. They're clean. Easy to apply, even in freezing weather. Car men are sure to use them because they're so much simpler to apply and accurate to measure than grease or loose pellets. One man can service 20 to 30 cars from a single pail of Shell discs. The cumulative savings in time and manpower could be important for you.

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◀ Keeping expensive, revenue-producing equipment operational is a major reason why more center plates are being lubricated with unique Shell Center Plate discs. They help keep trucks moving freely, help reduce wear on wheel flanges and rail sides.

After 17 months' service, there are no major wear spots or galling on this 100 ton coal car center plate lubricated with Shell Center Plate Lubricant. Note how the dark gray component of the lubricant has made a tightly-adhering coating on the metal. Note also how clean the flange has remained for 17 months.

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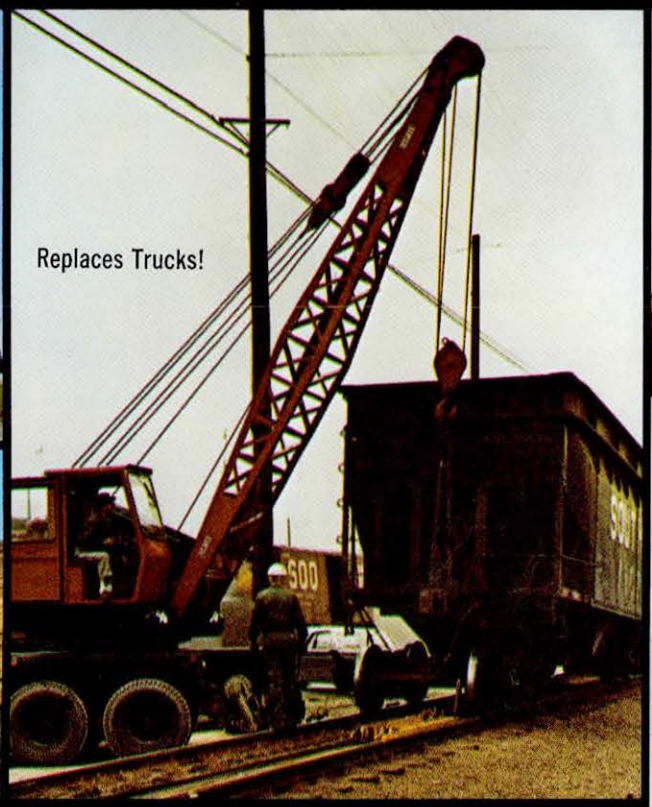

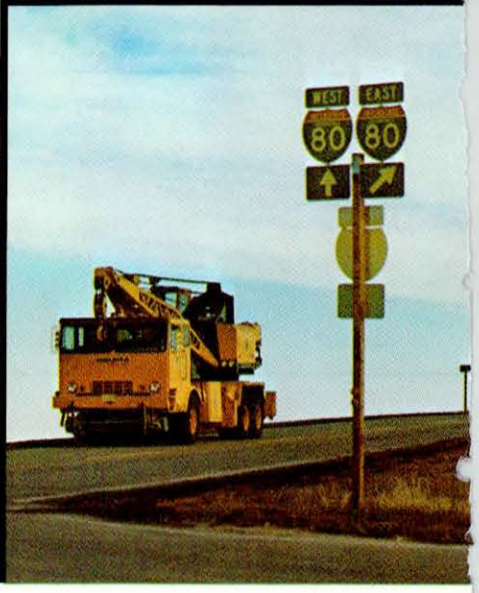

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Can railroads live with the FRA track standards?

$2.2 billion seen as the cost of meeting unmodified Federal regulations.

By **MERWIN H. DICK,** Engineering Editor

The chief engineer of a large railroad was speaking. "Normally we spend about $100 million annually on track maintenance," he said. "If the FRA track standards are put into effect without modification we will have to spend an additional $70 million to bring our tracks into conformity with them. After that it will cost us an additional $15 million annually."

On nearly every road the story was the same, with only the figures varying depending on the size of the property. The extra costs are calculated on the basis of compliance with the initial track standards proposed by the Federal Railroad Administration in accordance with the Federal Safety Act. of 1970.

● **A $2.2 billion item.** For the industry as a whole, the railroads have estimated that an expenditure of $2.2 billion will be necessary to bring tracks into conformity with FRA standards unless they are modified. After that it is estimated that an additional annual expenditure of $141.8 million will be necessary to comply with the FRA standards. The accompanying table itemizes individual costs making up the totals.

Oddly enough, the shocking figure of $2.2 billion was developed as the result of FRA's suggestion that the railroads come up with estimates showing both the cost of the standards and the benefits to be derived as a result of them. If there was any thought that the benefits would justify the costs it was set to rest by the railroads' estimate of the savings that would result from the expenditures required by the FRA standards.

To get at the benefits the railroads developed figures to show the cost to them of train accidents attributed to defects in track maintenance. This cost, it was estimated, comes to $46 million. This total was made up of three items: Property damage, $34.7 million; personal injuries, $1.3 million; and damage to lading, $10 million. These figures, it was noted, are based on official data for 1969 and 1970. The savings, obviously, would be realized only in case of the unlikely eventuality that all train accidents would thereby be eliminated.

● **Part of rule-making procedure.** The cost/benefit figures developed by a special task force of the AAR's Engineering Division, were included in a statement prepared for presentation at a hearing on August 2 which was held by the FRA as part of the rule-making procedure. Purpose of the hearing was to give interested parties an opportunity to comment on the proposed initial standards which had been published in the Federal Register of June 23, 1971.

The railroad statement, totaling 41 pages, was prepared by Edward G. Howard, general attorney of the AAR. Written comments were also submitted by the Railway Progress Institute, the Congress of Railway Unions and a number of individual railroads.

In furtherance of the rule-making procedure the suggestions for changes contained in the comments are now under consideration by the FRA's Office of Standards which is headed as director by John E. Rourke. Rourke has indicated that "some modification of the initial standards will be in order" (see the interview on following pages). Neither the nature nor extent of these modifications will be known by anyone outside the FRA until the modified version is published in the Federal Register. The best information available is this will be mid-September.

● **AAR standards not used.** Any hopes railroads may have had that the FRA would base its proposed initial track standards on recommended standards developed by railroads were quickly dispelled following publication of the FRA rules on June 23. The railroad-recommended standards had been hurriedly prepared last year by a task force of the AAR Engineering Division, the understanding being that any such rules developed by the FRA would be based on "existing standards." However, any resemblance between the two codes is "superficial only," said the AAR statement.

The AAR statement went on to argue that the AAR rules should be adopted in lieu of the FRA proposals. It said: "The AAR standards, if adopted, would provide safety—which are all any standards are supposed to do. The FRA standards would at many points require either substantial expenditures or substantial interference with operations not justified by any safety reason. They are therefore not justified at all, for the jurisdiction of the FRA over track extends only to matters of safety. To the extent that any rule is not needed for safety, it lacks statutory authority."

Noting that the FRA rules allow only until Oct. 16, 1972, to bring existing track into compliance with the proposed rules, the AAR statement discussed the need for additional compliance time in some instances. "Many of these proposals fall in the category of rules with which the American railroads cannot fully comply by mid-October 1972," said the statement. However, because of the lack of time

Estimated cost of proposed FRA rules

Item	Initial cost (millions)	Annual cost (millions)
Drainage	$ —	$ 20.0
Vegetation	—	15.0
Ballast	25.0	9.0
Gage	126.0	50.0
Line & surface	315.0	
Ties	480.0	25.0
Rail	970.2	—
Rail welding & grinding	—	14.0
Rail testing	—	8.8
Joint bars	208.0	—
Tie plates	80.0	—
Total	$2,204.2	$141.8

to go into a full exposition of this aspect of the subject at the time, the statement indicated that the AAR will undertake to do so "as soon after the new rules have been adopted as is consistent with thorough analysis."

● **Not enough materials.** Thus the AAR apeared to be putting the FRA on notice that an issue would be made later of the matter of compliance time in areas where railroads feel that additional time is required. It did, however, have some preliminary remarks to make about this subject in these words:

"It appears that manufacturers of rail and ties, two track components that would have to be purchased in large quantities for compliance, would not be able to supply sufficient amounts of either by October 1972. Difficulty, ranging to impossibility, would be experienced in hiring and training forces to install these materials even if they were available. The same would be true of the procurement of such services as ballast cleaning, internal rail defect inspection, and rail grinding in that time. Even if all this could be done in time, it would have to be paid for with funds that the railroad industry does not have and will not have by October 1972."

In a discussion of specific FRA rules the AAR statement levelled a barrage of criticism at rules establishing requirements for gauge, track surface, the size of the ballast section, defects in ties, mismatch and batter at rail ends, and defects in rails.

On the matter of gauge, the AAR statement offered its own suggestions and then said: "Lesser tolerances than those suggested may affect ride quality, but they do not affect safety, which is what these rules are all about."

● **"Prettier, but not safer."** In the same vein, the AAR statement attacked the FRA's requirements for track surface. These requirements, said the statement, "would entail tremendous expenditures . . . that would yield no beneficial results in terms of safety." After these expenditures "the track would only be prettier in appearance; not necessarily safer," said the AAR.

The proposed limits on defective crossties, "if not amended, would impose one of the major cost obstacles presented by the track standards," declared the AAR statement.

The requirements in the FRA rules regarding rail defects, rail-end mismatch and rail-end batter are considered unnecessarily severe by the AAR. Regarding the requirements applying to rail defects, the AAR statement said:

"Experience has shown that appropriate action taken where rails are found to contain defects that are reliably detectable through normal visual inspection or the use of modern rail-flaw detector cars now in general use is all that is required for safety." This statement was prompted by a table in the FRA rules which calls for the speed of trains to be reduced to 10 mph where rails are found to contain certain defects, the speed restriction to be continued in effect until the defective rail is changed out.

After these expenditures, "the track would only be prettier in appearance, not safer."

● **"Needless restriction."** A table in the FRA rules setting limits for the mismatch of rails at joints was said by the AAR statement to be "needlessly restrictive." It added: "The mismatch limits proposed by the FRA are not needed for safety and they would be virtually impossible to meet when attempting to match secondhand rails in the field."

Limitations placed on rail-end batter by the FRA rules "are likewise beyond the limits required for safety," said the AAR statement. "End batter, in fact, is almost wholly an economic problem, having little or no relation to safety."

The AAR statement also took exception to FRA requirements relating to continuous welded rail, broken joint bars, tie plates, track spikes and track shims. Exception was taken, too, to the wording of numerous requirements applying to turnouts, track crossings, switches and frogs. A section on inspection also came in for its share of criticism.

Numerous amendments in the FRA rules were recommended by the Congress of Railway Unions in a statement presented by Al H. Chesser, national legislative director for the United Transportation Union. However, the CRU position was just the reverse of that taken by the AAR. CRU wants the rules tightened in many respects, including more frequent inspections than those specified by the FRA rules. Each of its recommended changes, said the CRU statement, "is designed to accomplish one purpose and one purpose only—safety."

The comments submitted by the RPI were prepared by Paul S. Settle, chairman of the RPI's Commmittee on Maintenance of Way. These comments recommended numerous changes in the FRA standards, most of them aimed at reducing the severity of the rules. Among his closing comments Settle said:

"We suppliers, and I am sure most railroaders, believe the Federal Railroad Safety Act to be a good law and in the best interest of the country. To make its safety implementation fulfill its aims insofar as the track specifications are concerned, needs only three things:

"(1) Rules that permit our railroads to compete on an equal basis with other forms of transportation so as to produce an adequate return on investment and provide funds for improved track maintenance.

"(2) Modify these standards to practical, enforceable dimensions.

"(3) Encourage the use of practical judgment and cooperation in their enforcement so as to achieve the aim of the new law—better and safer track."

● **The short-line position.** Comments were also submitted by the American Short Line Railroad Association and by individual railroads. The statement of the Short Line Association, submitted by P. H. Croft, president and treasurer, contained this comment: "Compliance with the proposed rules . . . would require vast expenditures of monies by the short lines (which most certainly

are not available to them) for the intended purpose of increasing safety on properties which already proudly exhibit a flawless, or near flawless record.

The two largest railroads submitting statements at the August 2 hearing were the Chesapeake & Ohio/Baltimore & Ohio and the Southern. Speaking for the CO/B&O, E. Q. Johnson, assistant general manager maintenance —staff, said: "The track maintenance standards, as prepared by the FRA, are overly restrictive, particularly in the speed categories below 25 mph, are impossible to comply with within the time limitations prescribed and cannot be justified on a cost-benefit basis. On the C&O/B&O system, compliance with the FRA standards will require an initial expenditure of approximately $100 million and an additional annual maintenance-of-way expenditure of $7.7 million."

● **No answers.** Johnson then tried to find answers to the question: Where can C&O/B&O obtain this $100 million? Various possibilities were explored—and rejected. "Certainly not from present cash and working capital balances, which are well below that figure," he stated. "If by long-term borrowing, how do we convince lenders to provide funds for this project? We cannot offer them the security of $100 million of capital additions to our property because no more than 5% of the $100 million represents long-term capital improvements. We also cannot tell potential lenders that their interest return will come from savings generated by the new safety standards, such as by the elimination of derailments. On the assumption that 100% compliance with FRA standards would eliminate 75% of the derailments attributed to track defects, and this figure may well be too high, the annual reduction in track, equipment and property damage on the C&O/B&O would amount to only $3 million.

"The interest cost of borrowing $100 million of unsecured long-term debt by a railroad today, if it could be borrowed at all, would not be less than 10%. Thus, the saving from the proposed program, even at the most optimistic level, would not come close to meeting $10 million of annual interest charges, much less generating funds needed to pay off the debt itself."

● **"Disastrous, ruinous."** The statement submitted on behalf of the Southern used the terms "disastrous" and "ruinous" in describing the effect of the FRA rules. Prepared by William P. Stallsmith, Jr., attorney for the Southern, this statement first recited the amount spent for mainenance on that road and then said:

"Because of these heavy expenditures, Southern's tracks and right of way are relatively good condition. We believe they are safe. The pertinent statistics confirm this belief: The reportable train accidents on Southern caused by track defects declined by 12.63% between 1966 and 1970.

"Nevertheless, hundreds or even thousands of miles of Southern's tracks would not meet some of the provisions of the proposed track standards. Southern would be forced to expend many millions of dollars to continue in operation all of its existing lines. And almost all of those millions would be spent with little or no descernible effect on actual safety. The financial effect on Southern could be disastrous; the effect of those requirements on less prosperous lines would inevitably be ruinous.

"Southern does not oppose truly cost-effective safety requirements. On the contrary, Southern is vitally concerned with improving and maintaining safety. But Southern does object strongly to wasteful requirements in the name of safety that would yield scant results in comparison with their cost.

"The railroad industry is in deep financial trouble. Funds for any rail project are difficult for any railroad to find. Interest rates verge on the prohibitive. The nation cannot tolerate having more carriers thrust into bankruptcy by costly safety rules that do little or nothing for safety. Nor can the nation afford to have rules of scant safety significance convert healthy into marginal carriers. Such rules would bring nationalization several steps closer."

● **What engineers think.** So much for the written comments made as part of the rule-making procedure. What are the private thoughts of top engineering officers regarding the FRA safety rules? Do these officers feel the railroads can live with the proposed rules? Answers of top engineers to this question range from a "can't, no chance" comment to an attitude of hopefulness that the FRA will either modify the rules or will strike a "reasonable" posture in their enforcement.

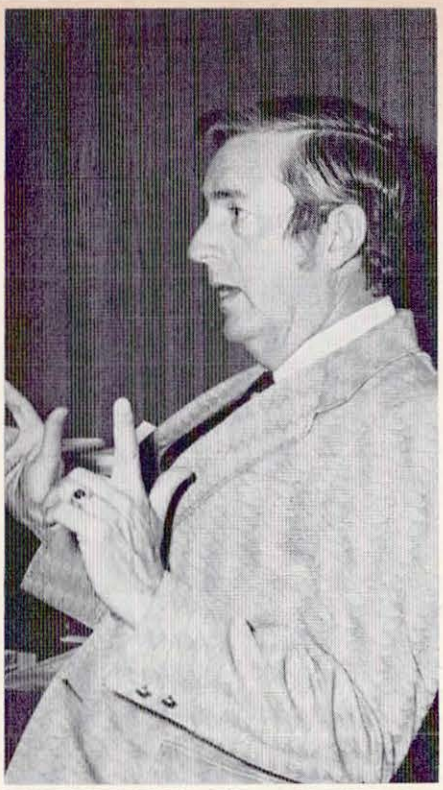
The chief engineer who made the "can't, no chance" comment later qualified the statement by saying that "we could live with the rules if necessary but we would have slow orders all over the railroad. The result would be catastrophic for the railroad because service would deteriorate still further." This officer estimates that, to bring the tracks of his road up to the FRA requirements, would require an additional expenditure of $60-70 million over the next 15 months, "and where would we get the money?"

Using common sense, it would be "possible to get the job done gradually over a period of time."

A chief engineer who hopes for an attitude of "reasonableness" on the part of the FRA had some arguments to bolster this position. He thinks that, using a common-sense approach on the part of both FRA and railroads, it would be "possible to get the job done gradually over a period of time." Since FRA will probably be short of inspectors, at least in the beginning, the idea would be for both FRA and railroads to concentrate at the start on the problem areas. In the absence of the commonsense approach some of the FRA requirements, particularly with respect to ties and ballast, "could murder us," declared this engineer.

With all the statements and estimates in, railroads could only wait to see if standards would be modified. Even with modification, large expenditures would still be required.

FRA sets stage for track regulation



ADMINISTRATION AND MODIFICATION. Mac E. Rogers, (left), director of FRA Bureau of Railroad Safety, will be in charge of administering new track standards. John E. Rourke, director of FRA's newly established Office of Standards, has been central figure in determining what modifications would be made in the proposals.

Now that the stage has been set for the regulation of track safety by the Federal Railroad Administration, and final track standards are about to be issued, what plans has the FRA made for implementing the standards? To get answers to this and other questions dealing with the subject, Railway Age *interviewed Mac E. Rogers, director of the FRA's Bureau of Railroad Safety, and John E. Rourke, director of its Office of Standards. Rogers will have direct supervision over administration of the standards. Here are the questions, and the answers.*

Q. Are the FRA's initial track standards as published in the Federal Register of June 23 more stringent than the track standards recommended by the AAR? If so, in what general respects?

A. The proposed FRA standards are in some ways more stringent than those proposed by the AAR. One area of difference is in the method to be used in measuring deviations from the standards. Our proposal calls for measuring the track under load. The AAR's recommendation was that the geometry of the track be measured under static conditions. In addition, it is believed the tie requirement in our standards is a little bit tighter than the AAR's recommendations. Our requirement for inspection of rail for internal defects is also more stringent than those of the AAR.

Q. As a result of comments received prior to the hearings on August 2 and testimony presented at the hearing, do you plan to modify your proposed standards in any major respects? If so, in what areas and to what extent?

A. At this time the comments presented by interested parties are being considered and it appears that some modification of the initial standards will be in order.

Q. When will the standards be ready for publication and issuance to the railroads?

A. We will have to work backwards in time to determine the answer to that question. The target date, that is, the Congressionally imposed deadline, is Oct. 16, 1971. Assuming that we would allow 30 days from publication of the final rule in the Federal Register to the actual effective date, then we should say that mid-September would find us with publication of the final rule.

Q. The written comments that the AAR presented at the hearing on Aug. 2 set forth the estimate that the initial cost of complying with your proposed standards would be $2.2 billion and that the annual cost thereafter would be $141.8 million. Would you care to comment on these estimates?

A. If we were to have issued standards which would cost the railroad industry nothing, or practically nothing, then the standards themselves would be valueless. The standards are the result of a law which took into consideration the increasing number of accidents on the railroads. What we, in effect, are telling the railroads is that they cannot fall back into a condition of deferred maintenance.

Q. Have any railroad officers indicated to you that the cost of maintaining tracks to your standards would be such as to force them out of business, or alternatively, would require that they reduce speeds to the point where they would no longer be competitive?

A. Such comments have not been made directly to us but we have heard secondhand that responsible railroad officers have made such comments.

Q. What other feedback have you had along this line?

A. We have received a surprising number of comments from shippers and receivers of freight on one or two branch lines of an individual carrier. It appears that these shippers and receivers were told that, unless that particular line complied with the standards by Oct. 15, 1972, it would be abandoned. We deplore this kind of tactic. Certainly, if a shipper or receiver is affected he should be told the whole story and the true story. The notice that went out said the FRA recognized that the industry will need a reasonable period in which to comply. We also very clearly state that any person who identifies a requirement that calls for a longer lead time should call it to our attention and let us give consideration to it.

Q. Do you visualize the possibility that one or more railroads may find it impossible for one reason or another to bring their tracks into compliance with your standards in the allotted time?

A. We certainly do visualize that possibility and it is for that reason that we left the door open for applying relief.

Q. Are you prepared in that case to allow railroads more time in which to comply?

A. We're prepared to review each ap-

(Continued on page 34)

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plication for relief on an individual basis.

Q. Do the track standards apply to all short lines?
A. Yes, they do.

Q. Your standards mention only track inspection by railroad personnel. Will inspections be made by FRA personnel?
A. Yes, inspections of the tracks will be made by Federal inspectors or by state inspectors in those states that will be certified to participate in enforcing the safety standards.

Q. What type of organization have you blueprinted for carrying out the inspections and otherwise implementing the provisions of the Federal Railroad Safety Act?
A. We plan to use the regional set-up we have now. In this set-up the United States is divided into eight regions. We hope to recruit qualified personnel in these various areas.

Q. It is understood that you are now recruiting the inspectors and other personnel you will need. Is this correct?
A. We have done some preliminary screening. However, actual recruiting cannot be started until such positions are authorized in our budget.

Q. Are the track inspectors required to take any kind of examination to prove their qualifications for the job?
A. They are required to take a mid-level civil service examination the same as any other applicants at this general level of employment.

Q. What do you mean by mid-level examination?
A. This is an examination that all applicants must take who are seeking to come into the employ of the Federal government at this particular level. There is nothing specific in the examination relating to the track. We are drafting a position description of track inspector, which defines the qualifications a man must have to be acceptable to us. Civil service will review the qualifications of each applicant and match them against the requirements laid out in the position description. This, in effect, is how we plan to maintain quality control over the track inspectors hired.

Q. What will be the salary range for track inspectors?
A. We hope it will be at the rate of pay for general service employees at the GS-12 level or about $15,000 per year.

Q. Are you getting applications for the position of track inspector from track men now in railroad employ?
A. Yes, we are getting an average of about five applications a day, and some of these are from track people. We presently have 780 applications for employment, about 50 of which are for the position of track inspector.

Q. How many track inspectors will you need?
A. We hope to recruit a sufficient amount of personnel to carry out the provisions of the Federal Railroad Safety Act of 1970, and we are going to be very careful in our hiring process to assure that we are hiring quality instead of quantity. We want safety inspectors who are public oriented and who have the expertise to do the job that needs to be done.

Q. To what extent do you plan to use track analyzer cars?
A. At this time we don't know the answer to that question. We expect to conduct inspections in many ways. At the outset of our efforts, when we won't have many people on the staff, our inspections will be pretty much limited to monitoring the inspections made by the railroads. You will notice we require the railroads, in the proposed rule, to keep records of their inspections. As funding permits, and that of course is a big problem, we will be able to field an adequate inspection force. They'll inspect track pretty much as railroad track inspectors operate today. To some extent they will walk track. They will also ride track motor cars and trains. Eventually, again if funding is available, we may be able to go to track-analyzer cars. These, by the way, would be just as valuable to the carriers as they would to FRA.

Q. The notice of proposed rule making stated that the standards "will become effective Oct. 15, 1971, with respect to newly constructed track and rebuilt track, and effective Oct. 15, 1972, with respect to existing track." I understand there is some confusion regarding interpretation of this sentence. Can you clarify it? Specifically, what is meant by "rebuilt track"?
A. In railroad parlance I think most people would understand what we mean by rebuilt track. However, in regulations I know we have to define to what degree track is rebuilt before it can be called "rebuilt track." We'll get some feeling from the industry and from labor to help us in defining rebuilt track. We have probably had as much trouble with this definition as the people who are going to be guided by it.

Q. Normally, in their heavy track maintenance programs railroads will change out ties that need to be renewed, will do some reballasting and will raise and surface the track. According to your understanding, would such track come under the heading of "rebuilt track?"
A. Yes, that is what we mean. Perhaps I should take the negative side and say that what we don't mean are situations where only a few ties are renewed along a stretch of track. You wouldn't call that "rebuilt track." As you suggested, tie renewals, ballasting, surfacing and correcting alignment would, in general, constitute rebuilding track, but again we need a clearer definition of the term.

Q. Doesn't the Federal Railroad Safety Act give the FRA jurisdiction over all railroad trackage including transit lines? There is nothing in your proposed standards covering this area. What do you propose to do about that?
A. We have purposely excluded rapid transit and those lines that are exclusively commuter operations at this time because the technical considerations for track and its maintenance in these areas are in many ways different from the general railroad operation. However, we have the authority and the mandate from Congress to prescribe rules, regulations and standards in all areas, including rapid transit, where the railroad safety problem manifests itself. When we do approach the commuter and rapid transit field it will be on a need basis. Actually, the safety problem may never evidence itself on some systems.

Q. The Federal Railroad Safety Act, it is believed, gives you authority over the safety of bridges and tunnels. What are your plans for developing safety standards for these areas?
A. The Act gives us authority in all areas of railroad safety. Inspection requirements for bridges and tunnels are being developed, but no date has been set for issuance. ■

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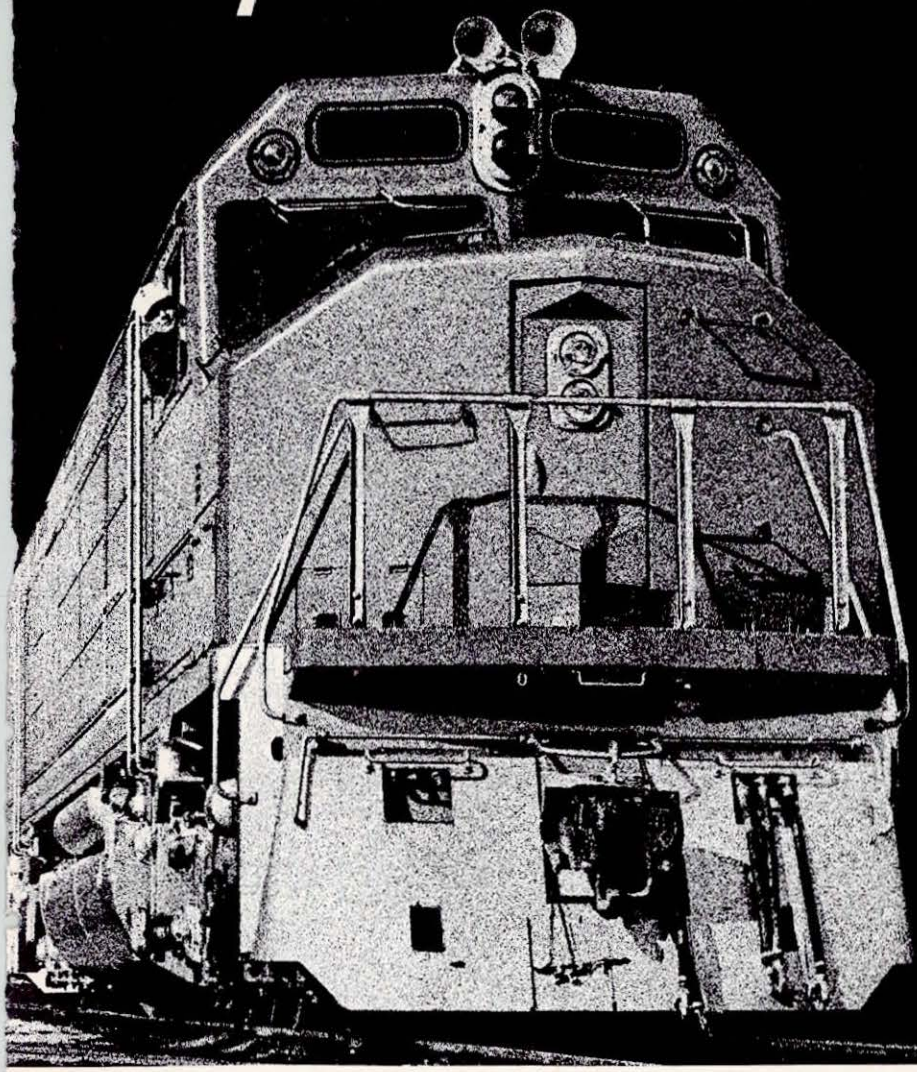

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Circle 30 on card opp. page 60

How to get more from aci

Applying aci at yard entrances, with weigh-in-motion scales and at interchange points show great promise for returns on investment.

The growing pains of automatic car identification are not unlike those of two-way radio back in the 1950's. Almost no one would consider removing radio today, yet in the early days of radio usage the doubters said there was no direct or tangible savings to offset its cost. But railroads did install radio and found it provided a tremendous improvement in operations, such as reducing delays to cars and trains. It saved time and indirectly did save money, usually in reduced operating expenses. Today, radio is accepted as a conventional operating tool.

Automatic car identification too, will someday be a conventional operating tool. Right now, say knowledgeable industry sources, the effort must be in applying aci where it will do the most good. Experience to date with some 150 scanners in service indicates three types of installations that bring about relatively prompt monetary savings. These are: aci for yard entrance and exit installations; aci working with weigh-in-motion scales; and aci located at interchange points.

● **Yard entrance checks.** Experience of about a dozen installations indicates that aci scanners located to check all inbound and outbound trains at yards can provide both short-term and long range benefits. For example, at Argentine, Kan., Santa Fe has installed 10 KarTrak aci scanners to monitor all moves in and out of its yard, which are averaging about 6,200 cars daily and will peak to about 8,000 (counting both arrivals and departures). Benefits of the aci check, according to R. M. Champion, vice president information systems, include:

—A more accurate list of all cars in train order.

—Elimination of the car checking positions.

—A reduction in the number of open records.

—Better control within the yard because a time and date will be established for every car arriving at Argentine. Eventually exceptions to standard throughput times for cars can be flagged by the computer to alert operating supervisors.

Peoria & Pekin Union has placed in service a data collection system consisting of nine ACI Systems Corp. scanners strategically placed to record all inbound and outbound movements at P&PU's East Peoria, Ill. "A" and "B" yards. Information from the scanners is fed into P&PU's teleprocessing and computer systems.

"Our new ACI system will make it possible for us to increase reliability of P&PU services, generate greater utilization of equipment and facilities, reduce operating expenses and improve the security of our operation," says P. H. Galloway, president and general manager. The aci system scans about 4,000 to 5,000 cars daily. Additionally, a major benefit will be a 17% reduction in clerical forces for the railway. Also, P&PU estimates that for every $1 invested in the aci system it will earn a return of $3.

● **Weigh with aci.** One of the generally most rewarding types of installations is that of tying aci in with a weigh-in-motion scale, Duluth, Missabe & Iron Range has had two such installations in successful service for over six years. In 1966, the Pennsylvania, prior to merger, installed two aci scanners in conjunction with weigh-in-motion scales for determining coal tonnage. The installations paid for themselves in about 8 months, and the return on investment has been over 60% annually.

CP Rail has a unit-train operation, a little over a year in service, in which aci is tied in with a weigh-in-motion scale at the coal loading site. The purpose of the system, says J. A. Forbes, transportation assistant, is to determine accurate scale weights for each car and automatically record these for revenue billing.

The unit-train operation involves the movement of some 5 million tons of coal over 700 miles of mountainous railroad to Pacific tidewater at Roberts Bank, B.C. A fleet of specialized "bathtub" type cars were developed for this operation. Each car, diesel unit and caboose assigned to the unit train is equipped with aci labels. At the loading site, a series 800 KarTrak aci scanner, a Streeter-Amet electronic scale and a General Automation SPC-12 digital computer are located.

An empty train arriving at the loading site crosses over the scale, passes the aci scanner, goes through the loading silos and completes its circuit around a loop. The loaded train, then in the opposite direction, passes the aci scanner, crosses the scale and departs, normally completing the entire cycle non-stop.

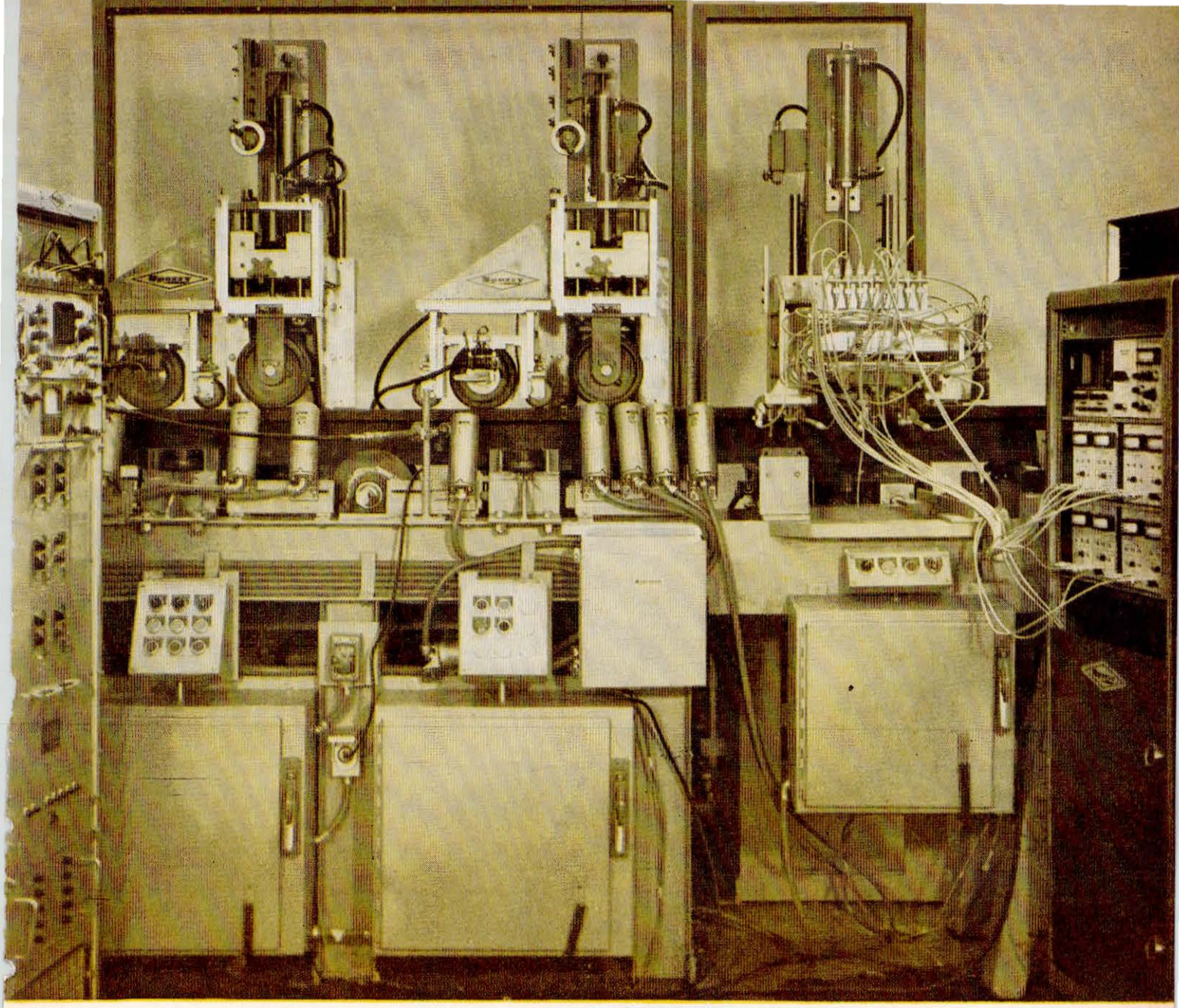
● **Automatic data handling.** As the inbound empty train moves over the scale and past the scanner, car initial, number and tare weight are recorded in the computer and also printed out on a local teletypewriter. Train direction is imprinted followed by a total of the light weight of the cars in the train and a count of the cars.

For the outbound movement, the cars are scanned by the aci and weighed. The computer compares each diesel unit number as registered by the aci with those in the inbound memory tables. When a match is made, the corresponding inbound train data is located, and the computer prints out the same train number that was assigned to the train inbound.

The loaded cars pass over the scale and for each car the gross weight and aci label reading is fed to the computer. The aci label information along with the tare, gross and net weights are printed for each car with the net weight calculated by the computer.

The final outbound train printout shows the totals: number of cars, tare and gross weights of the entire train, excluding engine weight. The aci scale and computerized weights and totals are printed directly on a straight bill of lading (short form) which constitutes the official shipping document. The corrected form is retransmitted into the central computer at Montreal and forms the basis for billing the customer.

● **Interchange data too.** At least four railroads have aci scanners providing time, date and car numbers for interchange use. Agreements are being worked out to have the aci-generated data accepted for the interchange documentation. One of the key elements in the Chicago General Managers' Association plan for a terminal aci system is that of providing the official interchange documentation via aci. The GMA aci plan is about to be voted on by member roads. Also, the benefits to the public of this proposed terminal aci system have been documented and presented to the Federal Railroad Administration requesting funds as a pilot project for the improvement of transportation. Immediate benefits would be reducing the time trains now spend blocking highway crossings due to congestion in yarding and reduced over-the-road hauling of trailers and containers, thus relieving highway congestion in the Chicago area. ■



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Circle 31 on card opp. page 60

PUEBLO

Test-tube for tomorrow's railroads

DOT's Colorado test center, though widely viewed as a hatchery for far-out passenger transport concepts, actually will concentrate heavily on improving conventional freight and passenger railroading.

On a sun-scorched, 30,000-acre rectangle of semi-desert 20 miles northeast of Pueblo, Colo., where only a year ago the antelope roamed, two air-conditioned New York City subway cars late in August were making periodic runs up and down a three-mile section of new track. A General Electric 3,000-hp locomotive, wearing the red and white livery of the U.S. Department of Transportation, squatted nearby, feeding power to the rails. A mile or so to the northwest, a three-passenger LIMVR (linear induction motor vehicle, research), looking for the world like something out of an old Flash Gordon comic strip, whooshed up and down its own six-mile track, startling the local rattlesnake population.

This was the scene at DOT's High Speed Ground Test Center one year after workmen started clearing away the sagebrush. Here the stage is being set for the revolution in ground transportation research and development promised by Transportation Secretary John A. Volpe. So far, the action has been spotty, and not of a type calculated to stir the adrenalin of line-haul railroaders. But wait.

Within the next two months, construction will begin on the third of three planned test tracks—the Federal Railroad Administration's 16-mile oval. And that oval will embrace an R&D complex that promises to become the test-tube for tomorrow's railroads.

● **Blueprint for progress.** In his Washington office a few days ago, Myles B. Mitchell, director of DOT's Office of High Speed Ground Transportation, displayed a diagram of this complex-within-a-complex. This diagram (see facing page) is vastly more complicated than the simple oval of rail that has appeared on previous plans. It should go a long way toward reassuring railroad men that DOT's Colorado center will be something far more than a testing ground for subways, streetcars and far-out concepts. It will be three to four years before all the pieces are in place, but when they are in place, Mitchell is convinced that U.S. railroads, as well as commuter-rail and transit properties, will have an R&D facility second to none in the world.

PROJECT FOR PUEBLO?

It could be. DOT is interested in Santa Fe's coaxial train concept. Secretary Volpe inspects model at Pueblo.

"First we will put in the test oval, and that should be completed by next summer," explained Mitchell. "Note that the FRA track will have a piece of commonality with the UMTA [Urban Mass Transportation Administration] oval. This will be an electrified track, and we can use that for electrified testing. The remainder of the FRA test will be for diesel operation, partly welded rail and partly bolted. Some of the track will be new and some will be old, so that we can test under all conditions.

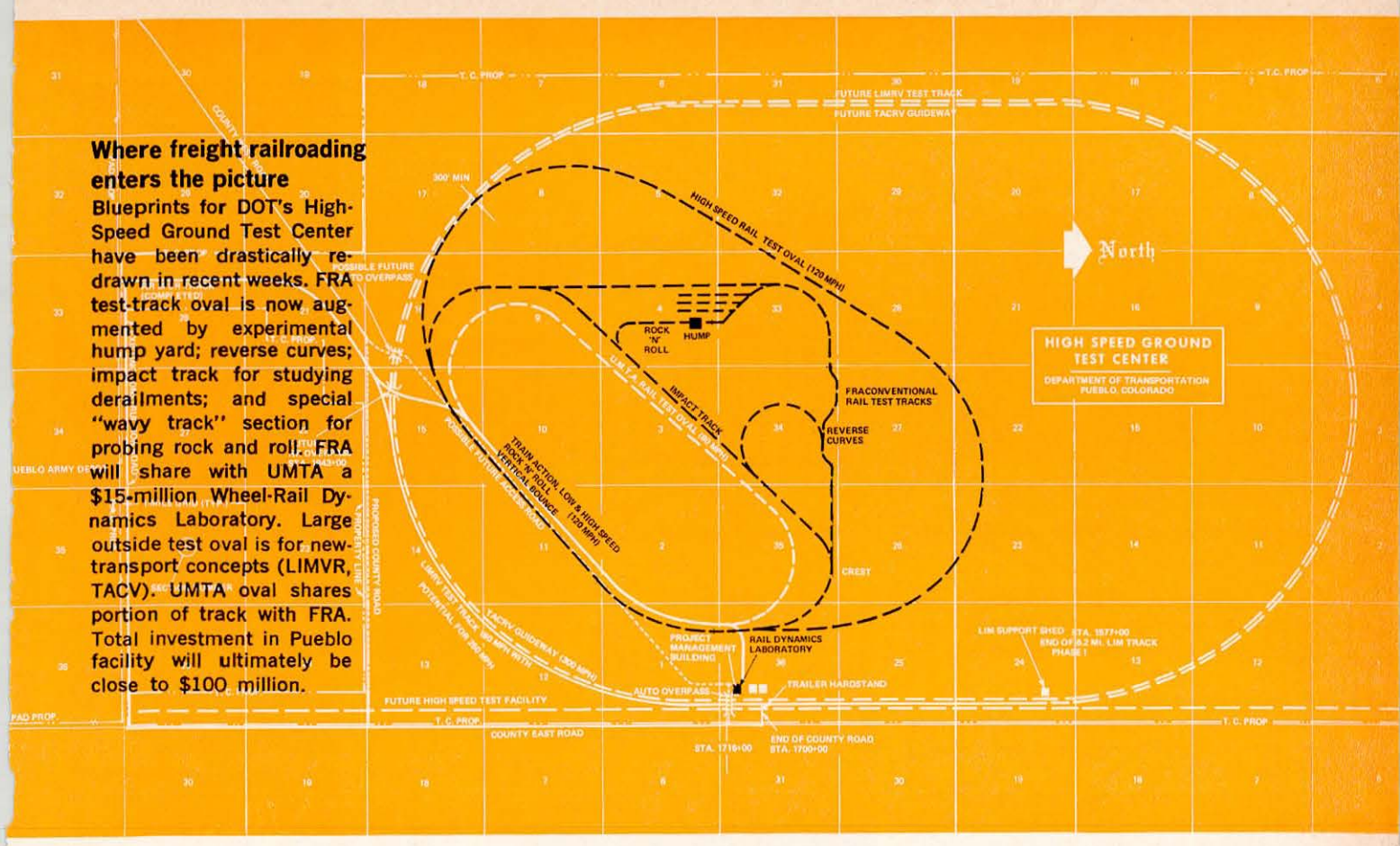
"Then we will put in reverse curves; and a special section of wavy track so that we can study rock 'n roll problems. We will put in our own hump yard. Making up of trains is the biggest problem we have in the fast movement of freight. We want to look at some new concepts, and to do that you can't tie up a main yard somewhere in the country. We will have an impact track, and a destructive test pit so that we can actually derail trains. We will have some pretty sizeable grades to pull and we will get into the problem of long train inter-action.

"What we are going to have here is something the railroads and their suppliers can use. We hope they will use it."

● **$80 million plus.** How much Federal money is poured into the Pueblo facility, and how fast, will depend on the annual mood of Congress. Mitchell feels that the ultimate investment will be well in excess of $80 million when the four main components of the center—the 20-mile LIMVR and TACV (tracked air cushion vehicle) ovals; the nine-mile UMTA test track; the 16-mile FRA track and related facilities; and the Wheel/Rail Dynamics Laboratory —are completed.

The Wheel/Rail Lab alone will cost an estimated $15 million. This will be shared by FRA and UMTA and is due for completion in 1973.

"Almost from the very beginning of the FRA in 1967," Mitchell noted recently, "the Office of High Speed Ground Transportation concentrated on finding the best possible source of data



Where freight railroading enters the picture

Blueprints for DOT's High-Speed Ground Test Center have been drastically redrawn in recent weeks. FRA test-track oval is now augmented by experimental hump yard; reverse curves; impact track for studying derailments; and special "wavy track" section for probing rock and roll. FRA will share with UMTA a $15-million Wheel-Rail Dynamics Laboratory. Large outside test oval is for new-transport concepts (LIMVR, TACV). UMTA oval shares portion of track with FRA. Total investment in Pueblo facility will ultimately be close to $100 million.

to support its technical research. After mulling over the various alternatives, it was decided that a laboratory operation of full-scale rolling stock would be the best approach.

"In 1970, Wyle Laboratories, under contract to the Federal Railroad Administration, with joint funding by the Urban Mass Transportation Administration, initiated the preliminary design for this facility. It was originally planned that emphasis should be placed on passenger vehicle test parameters. Such vehicles would be expected to be relatively low weight and operate on tracks with minimal irregularities. Objectives for the design were broadened, however, at the request of the industry, to include slower, heavier vehicles with rougher track conditions, in order to study today's vehicles with today's track conditions. Current plans call for the capability of testing vehicles up to 200 feet in length, 20 feet in width, 26 feet in height, 8 feet in gauge, 6 or 8 axles with axle loads of 100,000 pounds, and a total vehicle gross weight of 400,000 pounds.

"The facility will be capable of operation in a number of distinct modes, each of which promises to contribute to greater knowledge of wheel-rail phenomena. These modes are distinguished by the complexity and variety of inputs, which range from simulation of simple track irregularities to the reproduction of the most complex combinations of track geometry. Research will include investigations into wheel and rail impact stresses, roadbed dynamics, adhesion, guidance stability, and suspension design. The testing activities will include analyses of the ride quality of existing vehicles, re-staging of field problems and accidents from regular railroad operations and prototype shakedowns."

Mitchell emphasized that "with full-scale operations we are going to get the kind of valid results that scale models just can't deliver."

● **How the Wheel/Rail Lab will work.** When he went to Pueblo a few weeks ago to formally open the first three miles of UMTA's test track, UMTA Administrator Carlos C. Villarreal described how the Wheel/Rail Lab will be used to help advance technology for rail rapid transit, commuter rail and light rail (street-car) equipment.

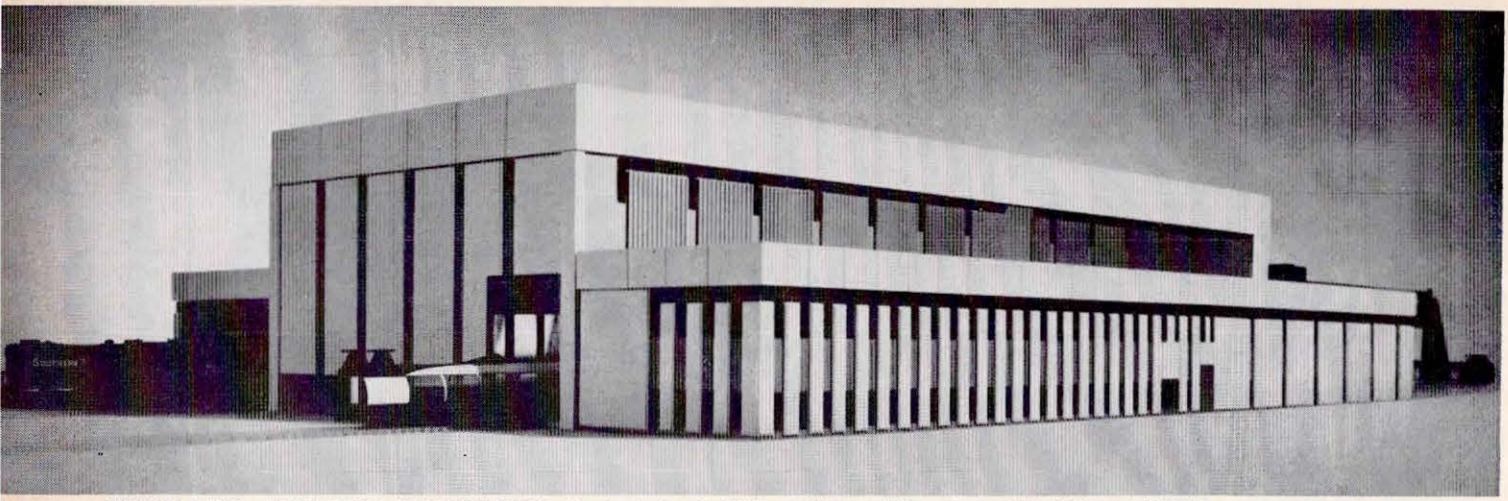
"The lab will be one of the most sophisticated such facilities in the world and will contain hydraulic platforms capable of independent operation in six degrees of freedom," explained Villarreal. "One platform will support each wheel of a transit car. On top of the platform, roller rigs will simulate rail surfaces of all kinds.

"A transit car, for example, will sit on the rollers, and, under its own power, spin the rollers as if moving down the track. The platforms will 'shake' the car, simulating track deformities encountered in actual operation. Because the entire assembly can be slowed or accelerated in any of its movements, detailed analysis of rail-wheel interface problems will be possible. Problems such as 'wheel screech' and the lateral movements of cars will be able to be isolated and studied as never before."

The two New York City transit cars now at Pueblo, on loan from the Metropolitan Transportation Authority, are "Mark I" versions of UMTA's planned Rail Diagnostic Car, Villarreal calls them "lab cars" to test out instrumentation for inclusion in the final Mark II Car, due to be operational next fall. "This car, a mobile laboratory, will be able to analyze track geometry and ride quality. Its data processing capability can record track profiles of any line, of any system. This data can then be plugged into the Wheel/Rail Lab to program the simulator. Then, by using a car typical of those operating on transit lines, we can identify and solve ride quality problems."

FRA will use the Wheel/Rail Lab in similar fashion to improve the riding qualities of freight equipment.

● **Railroads cooperate—finally.** Both Mitchell and Villarreal are aware that many railroad and rail transit men have viewed the whole Colorado operation with suspicion. This is partly because the very first vehicle at Pueblo was the futuristic LIMVR. This machine from the outer space of transport



WHEEL/RAIL DYNAMICS LABORATORY, budgeted at $15 million, will be shared by FRA and UMTA.

technology was widely publicized when DOT Secretary John A. Volpe formally dedicated the Pueblo center earlier this year.

At the same time, there has been considerable talk about the TACV test track, and about proposals for testing a tube vehicle.

There is also the fact that "High Speed Ground Test Center" is something of a misnomer. "We added 'high speed' for glamour; it helps to win votes in Congress," says one man who helped draft the enabling legislation.

But while most of the publicity has gone to the futuristic aspects of the test facility, Pueblo actually is geared heavily toward the improved movement of passengers and freight in conventional equipment at conventional speeds.

"Our tube vehicle won't be ready for 20 or 30 years. Our suspended vehicle or TACV could come within the next five or 10 years. But we expect to be reaping sizeable benefits from our railroad R&D projects within a couple of years at the latest," says Mitchell.

It took railroad men a long time to accept this—and as recently as last April, Mitchell was complaining over the failure of railroaders to respond to DOT's invitation to actively participate in laying out the FRA facilities.

But in recent weeks railroad R&D men have worked closely with DOT in drawing up the final plans. "They have started to appreciate the fact that our responsibility covers freight as well as passenger R&D," says Mitchell.

"A number of railroads are beginning to show interest. A lot of them want to start looking at hot box detectors. A large number are concerned generally about the life of their freight equipment, and in detecting incipient failures."

● **A three-pronged effort.** Who will initiate projects at Pueblo?

"It will be a three-pronged effort," says Mitchell. "DOT will initiate some projects on its own. Others will be initiated jointly with the railroad industry. And we will also make the facility available to any railroad that wants to work on proprietary projects. We will do that on a user's fee rate."

"We're interested in real work-a-day problems."
—Myles B. Mitchell, Director, OHSGT

Is it possible that a concept such as the Santa Fe's proposed coaxial train could be advanced at Pueblo?

"Yes," says Mitchell. "We are, in fact, looking at that particular concept. I can't say at this time that we are in a position to fund it, but whether we jointly fund it or whether the Santa Fe simply wants to use Pueblo for testing, it is certainly a good possibility."

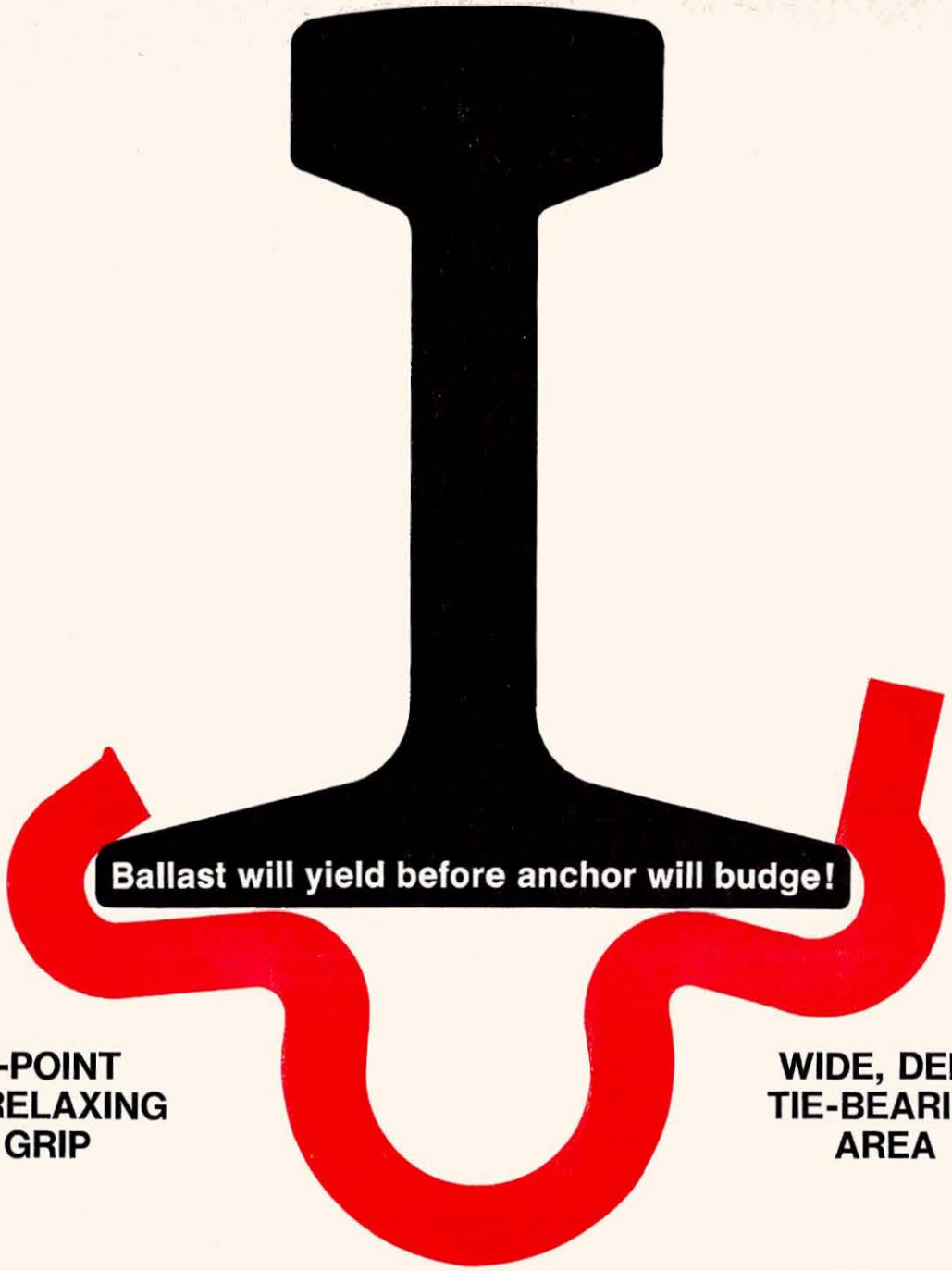
While emphasizing that "the lion's share of testing will be on railroad problems as we know and experience them," Mitchell does not underestimate the importance of some of the "far-out," sophisticated R&D that will take place at Pueblo.

● **Fallout for rails from LIMVR.** As for the LIMVR, he says: "Basically, this vehicle is being used to test a new concept in propulsion. And we think it has a lot more promise. Providing thrust by the use of electro-magnetic interaction between the motor and an aluminum rail centered in the guideway, the LIM offers the important advantages of reduced air pollution and noise. As such, we feel this is very timely in an era when environmental considerations are occupying such a large and well-deserved role in transportation planning. But, since the vehicle designed to test this motor involves steel wheels on steel rails we are not going to let this opportunity pass without learning all we can about wheel-rail interaction and braking systems. This admittedly is an off-shoot of our primary purpose in testing the linear induction motor, but it is an integral phase of the program.

"Then there is the more celebrated tracked air cushion vehicle. Basically, the TACV is a vehicle which travels on a thin cushion of air over a central guideway. It holds promise of speeds up to 300 mph with increased passenger comfort and safety. Promise of greater economy in guideway construction and maintenance is another attractive feature.

"For speeds in the 300-350 mph range that most likely will be needed in the years ahead, we are looking into a host of every advanced concepts that offer the best chance of providing such speeds while ensuring safety. At this point, tube systems seem to offer the most potential.

"A tube vehicle program will require a research vehicle of its own and a large-scale on-the-surface tube at the Test Center. In conjunction with this, we will be experimenting with evacuated and atmospheric pressure systems, together with tunnel operations of surface vehicles like the TACV. But these are a few years away and there are many allied problems with tube systems, not the least of which is reducing the enormous cost of tunneling;



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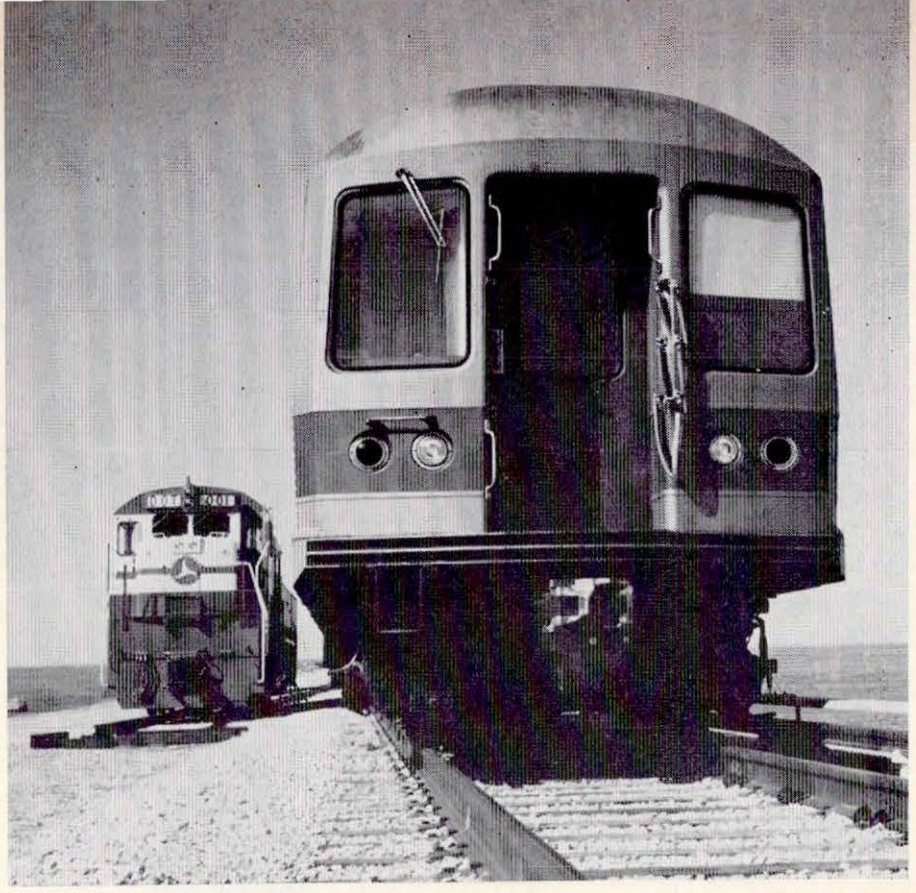


SILVER SPIKE is driven into UMTA test track by Administrator Carlos C. Villarreal as Col. Sen. Gordon Allott and Congressman Frank Evans look on. At right, GE locomotive provides power to run one of two New York City subway cars now at Pueblo.

there is the possibility, also that we might proceed with the development and testing of suspended vehicle systems. If so, we will have to make provision for full-scale or near full-scale testing."

● **Work-a-day problems and solutions.** But much of this is far in the future; for the present, Mitchell emphasizes, Pueblo will be involved in "real work-a-day problems and solutions"—R&D on suspension track interaction and stability, including derailment; propulsion, braking and adhesion; wheel and rail wear; track failure experiments; testing of initial prototype equipment.

"We will concentrate on advancing vehicle technology for rail rapid transit, commuter rail and for light rapid systems," said Villarreal. "Our next six miles of test track will incorporate various experimental roadbed configurations, including one-piece 'slab' tracks and experimental rail fasteners. The test track is equipped so as to accommodate future power distribution systems other than the 600-volt direct current which exists here now. Our A-C/D-C power substations will ultimately replace the diesel-electric locomotive now being used as a generator to provide the track with power."

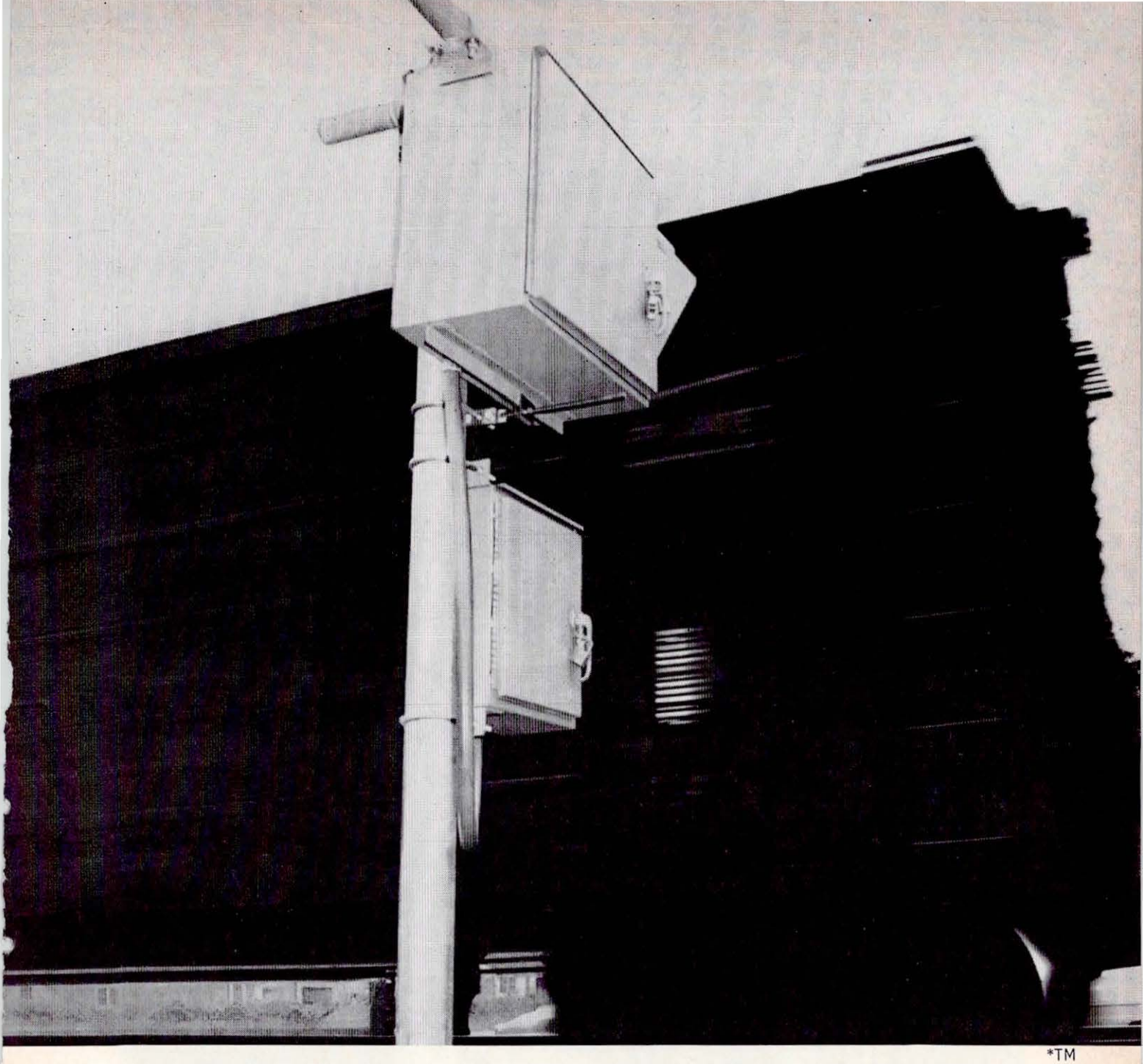
Villarreal said UMTA is concerned that its efforts be directed at resolving problems that are of real and immediate interest to rail transit and rail commuter operators. "Based upon these identified problem areas, a resource-limited schedule, and procurement restraints, initial UMTA emphasis will be placed upon the development of facilities and equipment at Pueblo which permit controlled investigation and analysis in the following areas: track geometry; track and suspension design; wheel-rail adhesion; rail-vehicle-foundation dynamic inter-actions; power characteristics including collection dynamics; characteristics of the transit operation environment; evaluation of adverse effects of vehicle upon the environment, including noise, ground vibration and air pollution; and evaluation of passenger compartment environment including noise level, heating and air-conditioning, and vehicle ride quality."

● **Economic alternatives.** Dr. Robert Hemmes, UMTA's research director, notes that "a lot of our projects, although they appear to be dominated by technology, are really explorations of economic alternatives. Take track fasteners, for example. In the transit industry, unlike the aerospace industry, the objective is constrained by economics rather than by reliability. We don't want to invent fasteners or wheels that never wear out. If it's cheaper to replace track fasteners every year rather than have one that will last 10 years, then that's the solution.

"So we would like to look at each of the components of a roadbed—the ballast, the ties, the fasteners, the rail, the method of welding continuous lengths —and see what the tradeoffs are in economics vs performance. This means that cities that are building new systems, such as Atlanta or Baltimore or St. Louis, as well as those that are maintaining old systems, will have had the uncertainty removed for them at Federal expense."

● **"If we can dream . . . "** says Villarreal: "In the first place, I think the benefits will come well before the year 2000. If we can just dream for a minute—first of all, within the urban environment there is going to be a rail system but a brand new rail system, almost noiseless, powered by non-polluting propulsion systems. Our objective is to design and develop a brand new family of rail commuter and rapid cars. We don't know precisely what the cars will be or what they will look like. From the outside, they will be comfortable; they will have improved suspension systems, with a high coefficient of safety and reliability and emphasis on low-cost operation; they will have pleasing interiors designed for durability as well as comfort, with good acoustical treatment, more efficient types of air conditioning, they will attain speeds of 80 to 100 mph within the urban environment. We are of course restricted in speed because of station spacing, and the acceleration and deceleration rates which the human being can stand comfortably. We visualize new buses and also automated circulation and distribution systems. The whole idea is to make public transportation so attractive that it will provide an alternative to the commuter that he doesn't have today."

And the whole idea of Pueblo, says Myles Mitchell, is to extend these kinds of improvements to all ground transportation—very importantly, the movement of freight ■



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Out of 42,197 label readings in a full-scale test of our KarTrak* ACI system, there were only two undetected errors.

(That's two cars out of about 400 miles of freight cars.)

Which means "Output Accuracy" was 99.99%.

Our Scanner/Decoder system hung up some other nice statistical records.

"Detection of Cars" turned out to be 99.93%.

"Completeness of Message" tested out to 99.72%.

The system detected 100% of all trains on the track.

And it proved to be 100% available —no breakdowns during the entire course of the tests which ran 24 hours a day for a 6-week period.

All these results clearly show one thing:

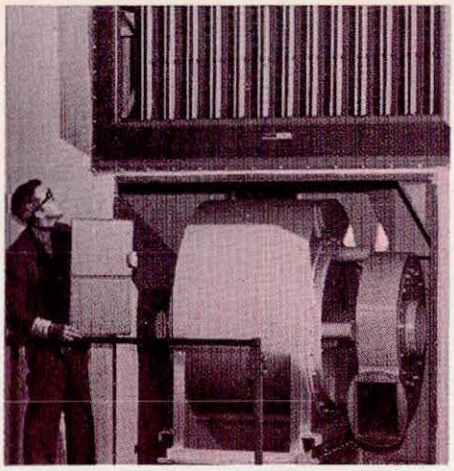
As long as the labels are readable, KarTrak will detect and report virtually 100% of all cars.

Nobody's perfect.

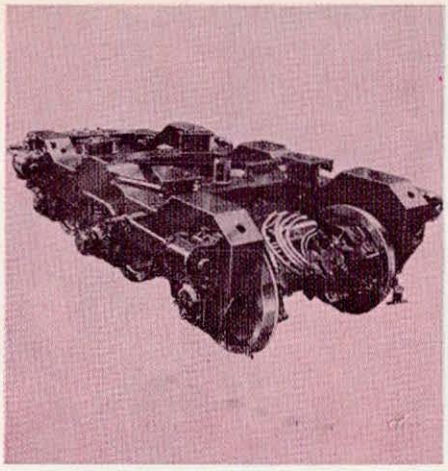
We'll be glad to tell you more about KarTrak and these tests. And fill all your other data communications needs from terminals, to modems, multiplexers, and front end controllers. Write to: Earl Trantham, Transportation and Industrial Division, GTE Information Systems Inc., 205 Burlington Rd., Bedford, Mass. 01730.

GTE INFORMATION SYSTEMS

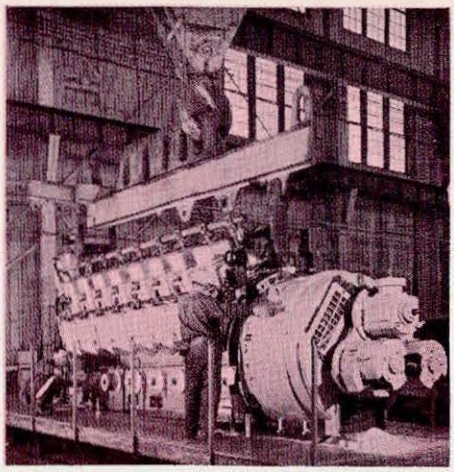
Circle 22 on card opp. page 60



A single mechanically driven blower and fully ducted electrical cooling and combustion air system with pressurized electrical control compartment.



Hi-adhesion trucks with low weight transfer characteristics and matching wheelslip highly discriminating and modulating control system.



Up-dated Model 251 engines with high capacity, water-cooled turbocharger and steel cap pistons.

LOOK AT THESE NEW "MLW" FEATURES

MLW-Industries
A Division of
MLW-Worthington Limited
1505 Dickson St., Montreal 426, P.Q.

Circle 23 on card opp. page 60

EXHIBIT IN PRINT

CONVENTION PROGRAM

AAR COMMUNICATION AND SIGNAL SECTION

The Americana
Bal Harbour, Fla.
October 5-7

AAR DATA SYSTEMS DIVISION

Fairmont-Roosevelt
New Orleans, La.
September 20-21

A service by the Simmons-Boardman Railway Age Group

TUESDAY, OCT. 5

10:00 a.m.—**General session**

Keynote address: W. T. Rice, Chairman and Chief Executive Officer, Seaboard Coast Line.

Remarks: John W. Porter, Chairman and President, Railway Signal & Communications Suppliers Association, and Executive Vice-President, General Railway Signal Co.

Remarks: R. D. Liggett, Chairman, Communication & Signal Section, and Chief Engineer, Communications and Signals, Seaboard Coast Line.

1:30 p.m.—**12 GHz—A Microwave Band of Growing Usefulness for the Industrials**—R. F. White, Senior Staff Engineer, GTE Lenkurt, Inc.

2:00 p.m.—**Modernization of Track Side Communications**—Glen T. Fisher, Director of Research, CP Rail.

2:30 p.m.—**Applications of SS1A Selective Signaling Systems to Railroad Communications**—C. J. Stephens, Sales Manager, Wescom, Inc.

3:15 p.m.—Concurrent Workshops

Committee B—**Radio and Microwave Systems,** and **Railroad-Commercial Communication Liaison Committee.**

Commitee C—**Communications and Data Systems,** and **Ad Hoc Committee to Study and Develop ACI Hardware Standards.**

WEDNESDAY, OCT. 6

9:00 a.m.—**The Fully Automatic Hotbox Detector Evaluator**—Paul W. Caulier, Senior Project Engineer, General Electric Co.

9:40 a.m.—**The Distributed Computer Concept**—Charles R. Powdermaker, Manager, Systems Engineering, General Railway Signal Co.

10:20 a.m.—Panel Discussion—**Inductive Interference**—A. J. Hendry, (Moderator) Assistant Director Signal Engineering—Special Projects, Burlington Northern; Members—J. J. Foster, Chief Signal, Electrical and Communications Officer, Reading; R. A. Dent, Assistant Electrical Engineer, Gibbs & Hill, Inc.; A. Hvizd, Chief Engineer, The Kerite Company.

1:30 p.m.—**Fail-Safe Designs Using Solid State Components**—Robert E. Harmon, President, Harmon Electronics, Inc.

2:00 p.m.—**Dead Section Track Circuit Protection**—G. B. Crofts, Manager of Engineering, Railroad Accessories Corp.

2:30 p.m.—**Remarks:** M. R. Sproles, Executive Director, Highway-Rail Programs, Association of American Railroads.

3:15 p.m. Concurrent Workshops

Committee D—**Highway Grade Crossing Protection**

Committee E—**Interlocking, Traffic Control and Block Signal Systems,** and **Special Committee on DOT, FRA Signal Rules, Standards & Instructions.**

Committee G—**Education and Training.**

THURSDAY, OCT. 7

9:00 a.m. **Reports:** Committees A through G

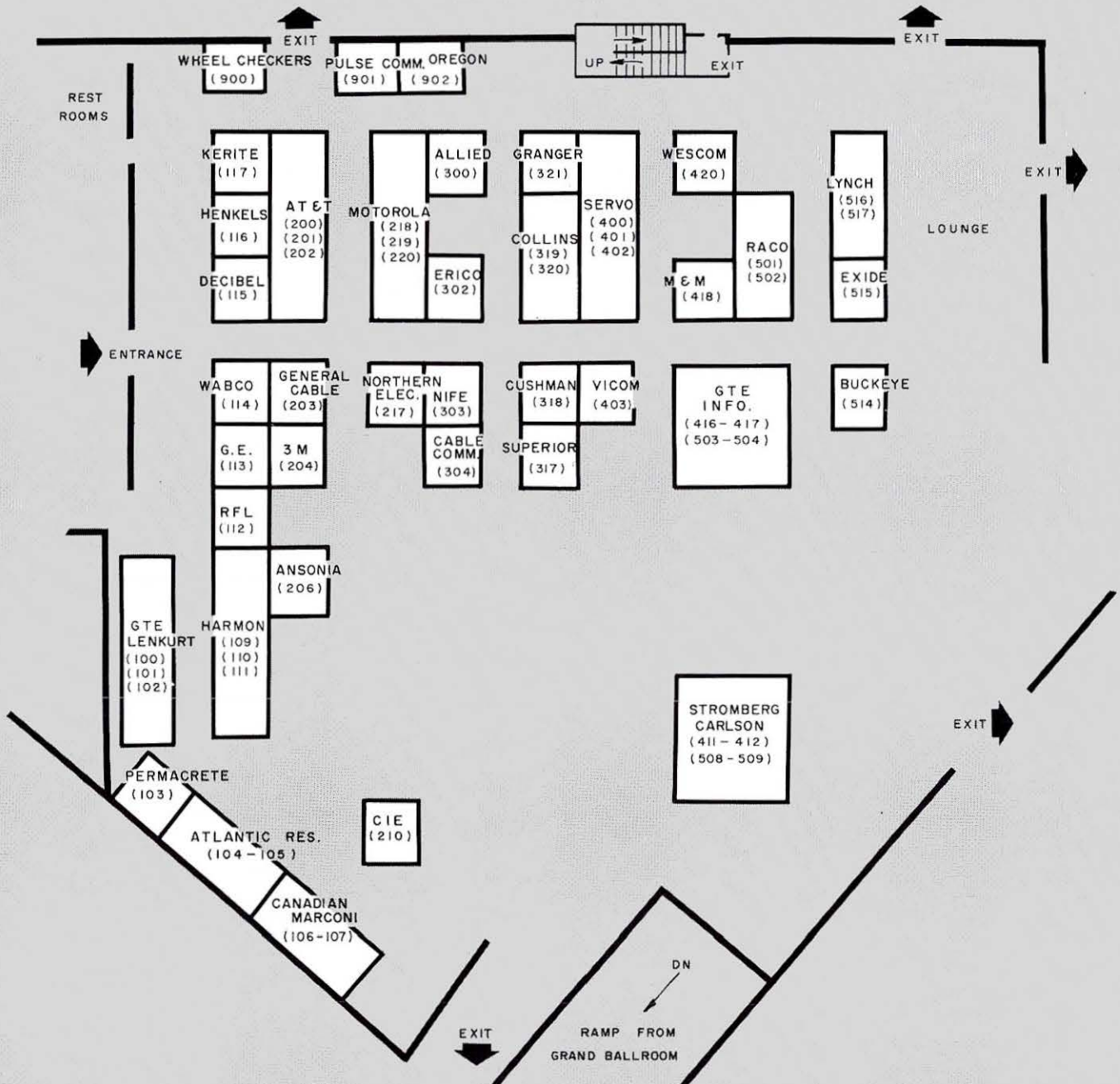
10:00 a.m. **Calgary Yard**—D. H. Walkington, Assistant Engineer of Signals-System, CP Rail; A. F. O'Rourke, Regional Manager, Uniswitch Div., WABCO, Ltd.

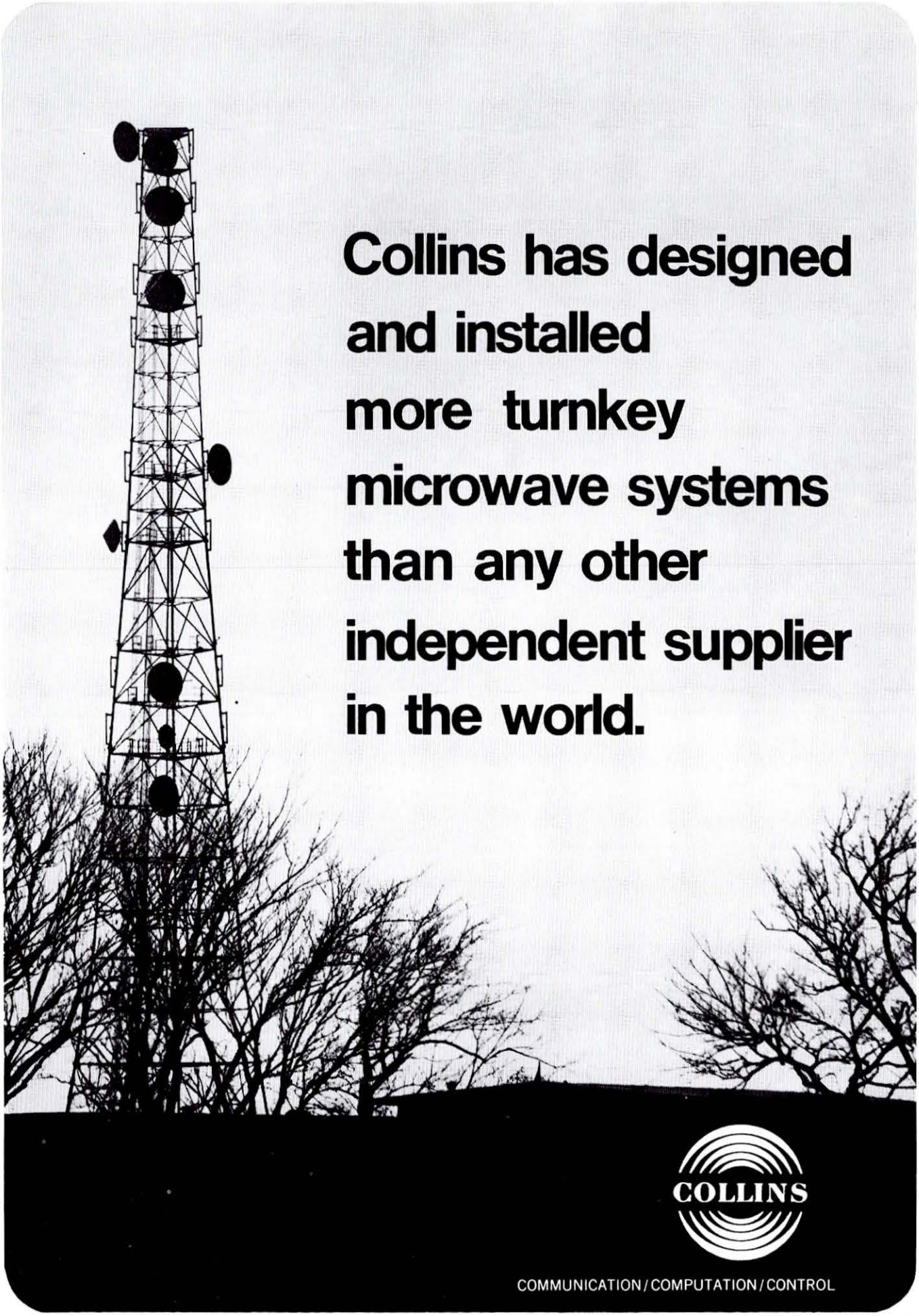
10:45 a.m.—**Standby Arrangement for CTC Control Utilizing DDD Facilities**—R. A. Howell, Senior Communications Engineer, Southern.

AMERICANA HOTEL

BAL HARBOUR, FLA.

EXHIBIT AREA





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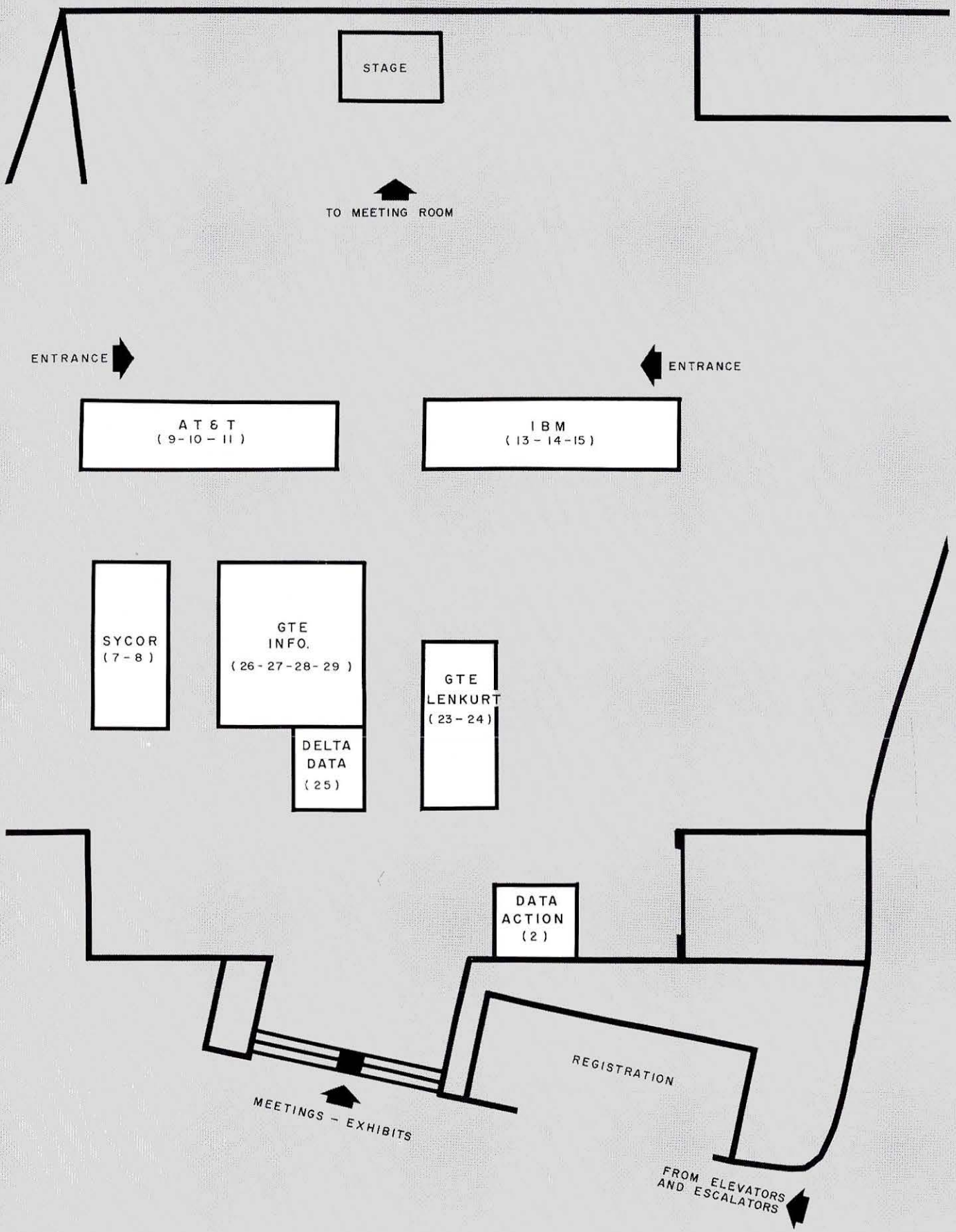
FAIRMONT – ROOSEVELT HOTEL

NEW ORLEANS, LA.

EXHIBIT AREA



Data Systems Division, AAR

Annual Meeting

Fairmont-Roosevelt Hotel, New Orleans, La.

CONVENTION PROGRAM

MONDAY, SEPT. 20

9:00 a.m.—**General session**

Opening Remarks: L. H. Scott, Chairman Data Systems Division and Assistant Vice President—Systems & Information Services, Seaboard Coast Line.

Keynote Address: Alan S. Boyd, President, Illinois Central.

11.00 a.m.—**Making Uses of Data Bases**—Cdr. Grace Hopper, Director of Navy Programming Languages Division, Department of the Navy.

12:00 N—**Luncheon and Address:** Stephen Ailes, President, Association of American Railroads.

1:30 p.m.—Concurrent Workshops

No. 1: Materials Data Systems
H. M. Hoffmeister, Vice President, Purchases & Materials, Missouri Pacific.

No. 2 : Engineering Applications
R. A. Stane, Manager-Research, Atchison, Topeka & Santa Fe.
G. L. Nichols, Manager-Industrial Engineering, Louisville & Nashville.
R. H. Knittel, Manager-Engineering Systems, Atchison, Topeka & Santa Fe.

No. 3: Marketing Applications
W. Bamert, Assistant Vice President-Administration Planning, Chesapeake & Ohio/Baltimore & Ohio.
W. H. Cramer, Assistant Vice President Traffic Planning, St. Louis-San Francisco.
R. L. Jacobsen, Director, Transportation Research, Denver & Rio Grande Western.
N. Spaeth, Supervisor-Data Services, Missouri Pacific.

No. 4: Automatic Car Identification
J. N. Albertson, General Superintendent Communications-System, Southern Pacific.

No. 5: Mechanical Data Systems
R. F. Tuve, Manager, Quality Control Engineering, Southern.

3:30 p.m.—Concurrent Workshops

No. 6: Use of Computers for Expense Controls
F. H. Coyne, Vice President-Finance, Burlington Northern.

No. 7: Improved Equipment Utilization Using Existing Data Bases
N. K. Ferguson, Assistant Chief Transportation Officer, Louisville & Nashville.

No. 8: Computer Security
J. K. Phillippi, Administrative Coordinator, Bessemer & Lake Erie.
R. F. Curran, Director, Programming Systems Development, Union Pacific.
J. J. Lacey, Manager, Data Processing, Elgin, Joliet & Eastern.
L. S. Imbery, Director, Data Processing, Illinois Central.
G. C. Krahn, Director-Accounting Systems, Burlington Northern.

No. 9: Network Simulation Model
J. N. Cetinich, Manager, Analytic Services, Southern Pacific.
W. R. Benson, Assistant Director, Economic & Management Science Division, Midwest Research Institute.
W. K. Minger, Data Systems Projects, Association of American Railroads.
R. W. Drucker, Assistant Director, Research-Analytical Techniques, Chesapeake & Ohio/Baltimore & Ohio.
R. L. Sauder, Director, Operations Research, Southern.

No. 10: Centralized Reporting and Processing

TUESDAY, SEPT. 21

9:00 a.m.—General session

Terminal ACI Management System—L. I. Dillenbeck, Director of Management Information Systems, Peoria & Pekin Union.

10:45 a.m.—**Panel Discussion—Data Exchange, Problems and Opportunities**
Presentations:
"Central Clearinghouse Data Exchange"—J. L. Jones, Vice President-Management Information Services, Southern.
"Road-to-Road Exchange"—J. W. Germany, General Manager-System Management Services, Southern Pacific.
"Common Codes in Data Exchange"—R. A. Petrash, Executive Director, Data Systems Division, Association of American Railroads.

12:00 N—**Luncheon and Address**

1:30 p.m.—General Session

Modern Computer Output Methods—A. E. Pew III, Assistant to Vice President, Management Services, Burlington Northern.

3:30 p.m.—**Exchange of Data Between Shippers and Carriers of All Modes**—E. A. Guilbert, President, Transportation Data Coordinating Committee.

4:15 p.m.—**Data Systems Division Progress Report**—R. A. Petrash, Executive Director, Data Systems Division, Association of American Railroads.

EXHIBIT IN PRINT

COMMUNICATIONS & SIGNALS

Below are listed products and service exhibited at the Communication & Signal Section, AAR, annual meeting. To obtain further information circle EP numbers on the white reader service card at the end of this section.

Allied Communications Equipment Supply (Booth 300)—Completely reconditioned and tested telephone carrier equipment is available. **EP-1.**

American Telephone & Telegraph Co. (Booths 200-202)—Nationwide digital network provides flexibility in handling data transmission. **EP-2.**

Teletype 37 data terminals and their components are described in a 28-page catalog. The terminals operate at 15 characters per second and have complete ASCII capabilities, as well as printing the 94 standard graphics. With an optional shiftout feature, up to 32 characters can be added.

The illustrated booklet describes how the receive-only (RO), keyboard send-receive (KSR) and automatic send-receive (ASR) sets are used for switched network services. Also detailed are such components as the control panel, keyboard, page printer, control logic module, cabinets, and the punch and reader module. *Teletype Corp.* **EP-3.**

Touch-Tone card dialer can handle credit cards with special punched marks or employee identification cards. **EP-4.**

Portable conference telephone has two outside microphones with microphone and speaker in instrument. **EP-5.**

Ansonia Wire & Cable Co. (Booth 206)—Single and multi-conductor (2-37) signal cable is available. **EP-6.**

Control cable has 1-33 conductors. **EP-7.**

Paired aerial and duct or paired buried communication cable has 19 AWG up to 400 pair, 22 and 24 AWG up to 600 pair. **EP-8.**

Quadded aerial or quadded buried is 16 AWG from 7-27 quads, and 19 AWG from 7-32 quads. **EP-9.**

Figure 8 distribution cable is 19, 22 and 24 AWG. **EP-10.**

Atlantic Research Corp. (Booths 104-105)—DQC-61 data quality controller monitors data networks. **EP-11.**

Selector equipment is for teletypewriter operation and control. **EP-12.**

Buckeye Telephone & Supply Co. (Booth 514)—Topo T-15 fiberglass insulators are of double-petticoat design and have low surface conductivity. **EP-13.**

Sangamo data sets transmit and receive at rates of 20 bits/sec to 2400 bits/sec. **EP-14.**

Cable Communication Systems, Inc. (Booth 304)—CCS type SMA-7/24 multiplex provides 24 channels operating in the 12 to 108 kHz range. **EP-15.**

Canadian Marconi Co. (Booths 106-107)—MCS 6900 pulse code modulation microwave radio relay system can handle data and voice transmission, as well as cpu-to-cpu transmission. **EP-16.**

Cleveland Institute of Electronics (Booth 210)—Electronics Technology course has 76 auto-programmed lessons. **EP-17.**

Electronic Communications is a 49 lesson course leading to the FCC 2nd class radio-telephone license. **EP-18.**

Collins Radio Co. (Booths 319-320)—Microwave systems operate in the 6 GHz and 2 GHz frequency bands. **EP-19.**

Series T-216 data modems are for private line applications. **EP-20.**

C System computers are for teleprocessing operations. **EP-21.**

Cushman Electronics, Inc. (Booth 318)—Model CE-3 FM monitor provides guidelines for testing and adjusting of VHF radio transmitters. **EP-22.**

The TTS transmission test system is a complete end-to-end Send/Receive and monitor system with high-level alarm. **EP-23.**

Decibel Products Inc. (Booth 115)

A new booklet contains information about both band-pass and band-reject duplexers and the application of filters in two-way radio communication systems. A discussion of receiver desensitization, transmitter noise, isolation requirements between transmitter and receiver as well as how these requirements can be accomplished is included. Also included are graphs showing the attenuation provided by vertical separation of antennas and by horizontal separation of antennas. **EP-24.**

Erico Products, Inc. (Booth 302)—Type ED5050 pulse coded overlay track circuit has 21 channels in frequency ranges from 313 Hz to 2706 Hz. **EP-25.**

ESB, Inc. Exide Power Systems Division (Booth 515)—"Now Power" batteries and battery chargers provide standby and primary power where needed. **EP-26.**

GTE Information Systems Inc. (Booths 416-417, 503-504)—KarTrak automatic car identification systems read color coded labels on rolling stock. **EP-27.**

Model 1500 Tempo 1 computer can be programmed with Assembly or Fortran languages. **EP-28.**

The Novar 5-41 is an on line conversational terminal, which can be interfaced with all third generation computers compatible with Selectric typewriters. Parity error generation and transmission is a standard feature. When a parity error is detected, it does not lock the keyboard. A two character buffer provides a temporary storage of data. thus preventing a loss of synchronization and/or keyboard lock-ups.

A built-in modem is available. Unattended operation of the terminal is available when used with automatic answer Data-phone or DAA. *Novar Corp.* **EP-29.**

Ultronic modems, multipliers and cathode ray tube terminals provide a line of data display capability. **EP-30.**

GTE Lenkurt, Inc. (Booths 100-102)—The 25D telegraph transmission system provides 75 to 200 bits/sec teletypewriter capacity. **EP-31.**

The 26D data set has 4800 bits/sec capacity plus a 150-baud secondary channel. **EP-32.**

The new 74-channel 36A multiplex system uses a polylithic crystal filter, which allows the system to set new standards of size, cost, performance and reliability for light-route multiplex equipment.

The 36A uses a low-level transmitted-carrier, single-sideband modulation technique and produces a line frequency spectrum between 4 kHz and 300 kHz. Standard 4-kHz channels may be inserted anywhere within

this frequency range to suit any application requirement.

Another advantage of the 36A design concept is its direct modulation plan to line frequency which provides the most conservative use of bandwidth, since there is no lost frequency spectrum due to intermediate group modulation of channels as is required by other systems.

The 36A has been designed to meet the needs of those light-route communications systems where quality transmission of both message and data signals is mandatory. Only a single adjustment of the receive signal level is required. Testpoints are provided for monitoring both the transmit and receive drop levels. **EP-33.**

The 46A3 channel bank is high-density multiplex equipment for microwave and coaxial transmission. **EP-34.**

The 46V coaxial cable communications system provides 2700-channel capacity or 1200 channels plus video over two coaxial tubes. **EP-35.**

The 78F2 microwave radio system has 600-channel maximum capacity, 5-watt power output for 2 GHz frequency band. **EP-36.**

The 960B journal data transmission system transmits highly accurate trackside journal temperature data over open wire, cable or microwave facilities. **EP-37.**

General Cable Corp. (Booth 203)—A complete line of signal and control cable comes in various conductor sizes and insulations to meet most any requirement. **EP-38.**

Communications cable, including coax meet most any telecommunications requirements. **EP-39.**

Pole line hardware includes clamps and supports for multiconductor cable including figure 8 wire and cable. **EP-40.**

General Electric Co. (Booth 113)—

A new brochure describes GE's coordinated shutter type hot journal detection systems, and discusses in detail the new five year guarantee on the shutter mechanism of the hotbox detectors. **EP-41.**

Granger Associates (Booth 321)—G/A model 6010 microwave provides five full channels plus optional order wire in the 790 to 960 MHz band. **EP-42.**

Harmon Electronics Inc. (Booths 109-111)—Model 310A flashing-light signal features all aluminum castings. **EP-43.**

Model 1515A high frequency train activated circuit is similar to a standard AFTAC equipment, but is designed as a short distance track circuit of only 50 ft. High frequency operation is at 20 KHz, 25 KHz and 30 KHz. Input voltage is 10—14 volt DC and input current is 125 ma. Transmitter has output impedance of 2 ohms, output voltage minimum 0.1 volts, 2 ohms load.

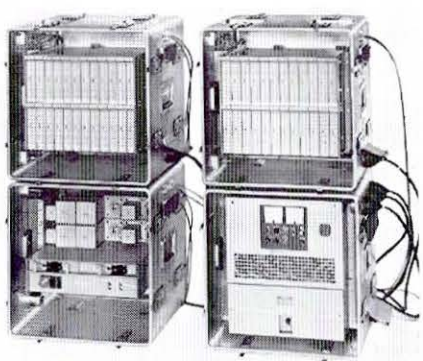
The HFTAC receiver has an input impedance of 1.5 ohms. Sensitivity is greater than .015 volts and selectivity is 30 db down from the next adjacent channel. Frequency stability is ±0.5%. Relay voltage is 12 volt DC nominal 500 ohms. Ring by is a 5 ft maximum adjusted with .06 ohm shunt. **EP-44.**

Henkels & McCoy (Booth 116)—Telephone plant construction and installation features mechanized plowing in of cable along rights-of-way. **EP-45.**

The Kerite Co. (Booth 117)—Single wire and stranded insulated wire for case wiring meet most any requirement. **EP-46.**

Multi-conductor signal cable meeting or exceeding AAR standards is available in a complete line. **EP-47.**

Lynch Communication Systems (Booths 516-517)—



The B910B portable microwave multiplex package is designed to meet requirements for emergency restoration and can establish temporary service on an immediate basis. Each end of the system is self-contained in four portable, lightweight aluminum cases with color-coded interconnections to permit rapid and simplified installation.

The B910B portable package is a transistorized, low density radio multiplexing system using single-sideband, suppressed carrier transmission to provide 24 voice channels in the 8 to 108 kHz spectrum. The system operates on a frequency division basis with each channel occupying a 4kHz slot in the baseband of a microwave radio. One case contains the complete power supply and ringing generator providing −48 volt dc and 20 Hz ac ringing voltage from a 117 volt ac source. **EP-48.**

The B770 tone carrier equipment is for telemetry, telegraph, supervisory control and alarm reporting. **EP-49.**

3M Company (Booth 204)—Heavy duty insulated rail joints feature improved tensile and compression strength. **EP-50.**

M&M Contracting Co. (Booth 418)—Mechanized plowing in of underground cable is a specialty. **EP-51.**

Motorola Communications & Electronics, Inc. (Booths 218-220)—

Incorporating extensive use of thick film monolithic integrated circuitry, the Micor railroad unit offers up to eight RF channels available for multichannel system operations. Micor models are designed for 64/12 volt dc, 64 volt dc, 12 volt dc or 117 volt ac operation. A variable-power transmitter with 45 watts maximum output is incorporated into the Micor railroad units.

Other proven Motorola two-way radio features included in the new Micor railroad radio are the Sensitron receiver with 80 db of intermodulation protection and 100 db selectivity protection against adjacent channel interference. Motorola Private Line squelch, time-out-timer, automatic frequency control, and an 0.0002% transmitter stability are also available. **EP-52.**

Micor mobile radio features plug-in

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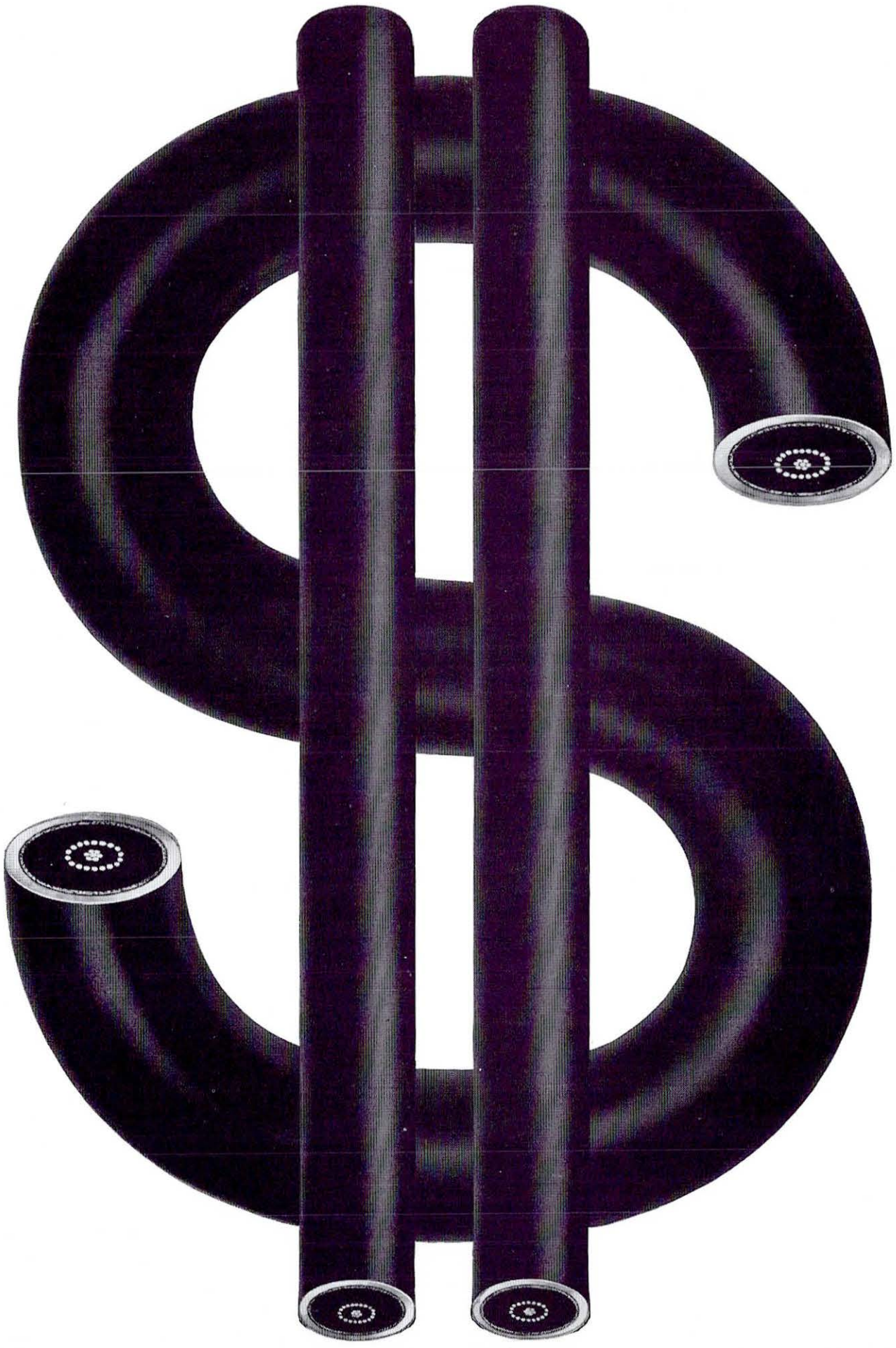

Today, it is more profitable than ever to invest in quality.

Reliability in cable is not a luxury, it's a necessity; replacement cost is prohibitive.

Specify Kerite! You get the Quality Assurance of 116 years of superior performance.

The Kerite Company • Principal Offices: Boston; Chicago; New York; Philadelphia; San Francisco; and Seymour, Connecticut • Sales Representation throughout the United States. A subsidiary of Harvey Hubbell Incorporated.

MEMBER RPI Kerite

the cable that lasts . . . and lasts . . . and lasts . . .

3½ CYCLE OR 3½ HERTZ?

Take your choice! We'll stick with tradition!

As successors to Western Electric in the manufacture and sale of 3½ cycle train dispatching telephone equipment, we continue to supply the railroad industry with new components, spare parts and supply items.

We also offer unit exchange on Type #60 selectors and factory reconditioning of selector keys. We believe that these services help to fill an ever widening gap created by the retirement of personnel skilled in the maintenance of 3½ cycle equipment, as well as by the curtailment of repair activities.

During the past two years, a merger resulted in a new name, PLAT GENERAL. Recent corporate restructuring has restored our former name, GENERAL COMMUNICATIONS PRODUCTS. Our new location is shown below.

GCP GENERAL COMMUNICATIONS PRODUCTS

Division of Alcotronics Corp.
Church Rd. & Roland Ave.
Mt. Laurel, New Jersey 08057
An Alco Standard Company

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module interchangeability with Micor railroad radio to provide over 2600 options. **EP-53.**

Pageboy II is a new shirt pocket size radio pager. **EP-54.**

Low Lite Level CCTV camera works with light levels as low as 0.05 footcandles with automatic light level compensation to work in strong daylight. **EP-55.**

The VP-100 teleprinter provides locomotives, waystations and automobiles with printed messages at 100 wpm over a radio channel. **EP-56.**

Handlie-Talkie portable radios include the new 100 milliwatt HT 100 model. **EP-57.**

Communication control centers coordinates local and system-wide communications including radio, telephone, paging, CCTV, intercom and other functions. **EP-58.**

Microwave systems provide system-wide and local communications channels in all railroad frequencies. **EP-59.**

Nife, Inc. (Booth 303)—

An installation, operation, and maintenance handbook for nickel-cadmium batteries for railroad signal service is now available. The 12-page pocket-size manual covers all procedures—from the time the batteries are received, through installation, operation, and routine maintenance. **EP-60.**

Nickel-cadmium alkaline storage batteries come in many sizes for communications services. **EP-61.**

Wide flexibility is available in a line of battery chargers and packaged automatic battery/charger consoles. **EP-62.**

Static inverters and uninterruptible power systems are available for computer installations. **EP-63.**

Northern Electric Co. Ltd. (Booth 217)—Plowable NE-174 short-to-medium haul composite coaxial cable is for carrier telephone and data systems. **EP-64.**

Type NE-375 long-haul composite coaxial cable is for voice and data transmission. **EP-65.**

Migrabloc is a distribution and toll cable that prevents cable flooding and resulting signal losses. **EP-66.**

Pulp-insulated exchange cable is available up to 3,000 pairs 26 AWG with composite aluminum/soldered steel sheath. **EP-67.**

Oregon Technical Products (Booth 902)—Hotbox detector views arch bar area of freight car truck sideframe. **EP-68.**

Secondary, mechanically operated automatic car identification labels can alert railroad personnel of dangerous operating conditions or equipment failures on rolling stock. **EP-69.**

Permacrete Products Corp. (Booth 103)—A wide variety of concrete housings for microwave, radio and signal equipment installations are available. **EP-70.**

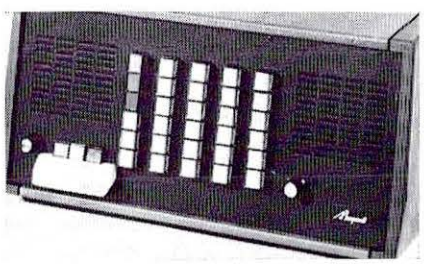
Pulse Communications, Inc. (Booth 901)—Wide variety of teletypewriter control devices are available. **EP-71.**

RFL Industries, Inc. (Booth 112)—All solid-state, modular single-side band voice grade carrier channels are for tone transmission, voice channels and speech plus. **EP-72.**

Variable frequency telemetering equipment, AM and FS voice frequency carrier provide a flexibility in meeting data and voice transmission requirements. **EP-73.**

Data modems are available in operational speeds up to 2400 bits/sec. **EP-74.**

Railroad Accessories Corp. (Booths 501-502)—Unilens colorlight signals can be used for totally new signaling systems or for conversion units for existing colorlight or searchlight signals. **EP-75.**



New pushbutton communications control consoles will accommodate talkback, high-level paging, telephone, radio control and special circuits as required. Consoles are available in sizes from 6 to 120 lines, expandable in increments of 6 lines. Pushbutton banks utilize printed circuit card plug-in techniques. **EP-76.**

Flashing-light signals and/or crossing gate mechanisms are available in a wide variety to meet most any grade crossing requirement. **EP-77.**

Grade Crossing Predictor provides constant warning time at grade crossings regardless of trains' approaching speeds. **EP-78.**

Pulse-code modulated track circuits provide for a variety of signal applications. **EP-79.**

Models RA-30 and RAD-30 snow melters can be remotely or automatically controlled. **EP-80.**

Servo Corp. of America (Booths 400-402)—Model 8808 hotbox detector features rail-mounted scanners and solid-state, all-electronic signal processing. **EP-81.**

Model 8000 trackside hotbox visual display system presents a digital readout pinpointing the hotbox location by means of an axle count. **EP-82.**

Model 1999 Servoanalyzer is for testing of control systems by observing phase and amplitude response with respect to various frequencies and wave shapes. **EP-83.**

Model 404 microwave sweep signal generator is for testing and calibration of microwave systems and components in the frequency range of 1 to 12.4 GHz. **EP-84.**

Series 2,000, 3,000 and 4,000 microwave traveling wave tube amplifiers are rated at 1, 10 and 20 watts for systems and microwave link use. **EP-85.**

Infrared and electro-optics provide for detection of ultraviolet, visible light and infrared radiation. **EP-86.**

Stromberg-Carlson Corp. (Booths 411-412, 508-509). Cross-reed electronic PABX-400A is a basic 100-line electronic telephone exchange that can be expanded to 400 lines. **EP-87.**

Vista-Phones are new model picture telephones (you can see your caller). **EP-88.**

Type SC-835 data modems are available in 75, 110 and 150 baud transmission rates. **EP-89.**

New telephones are available in Orange because this color has been found to have great visibility, hence can be useful as emergency phones. **EP-90.**

Superior Continental Corp. (Booth 317)—Telecommunications wires and multi-conductor cables are available in various sizes for most any requirement. **EP-91.**

Vicom Division, Vidar Corp. (Booth 403)—Wideband data carrier is for high-speed transmission. **EP-92.**

WABCO, Signal & Communications, Division (Booth 114)—Motion monitor MM-10 detects train movement to automatically stop and restart operation of highway crossing signals. **EP-93.**

AFO-II is newly packaged audio frequency overlay track circuit equipment. **EP-94.**

Mark II transmitter installed in the 3R radio provides improved operating characteristics with plug-in modular design. **EP-95.**

The 21CA base station remote control unit is of solid-state design, and up to 10 of these control units can operate with one base radio station. **EP-96.**

The 15AM public address amplifier meets new AAR specifications for rapid transit car applications. **EP-97.**

The new 5-watt Carryphone portable radio provides up to 5 channel operation. **EP-98.**

The 2,2 portable radio is hand-held with plug-in modular construction. **EP-99.**

Wescom, Inc. (Booth 420)—The 470 series, SS1A selective signaling system can meet a variety of application requirements for telephone systems. **EP-100.**

Wheel Checkers (Booth 900)—Broken flange and loose wheel detectors can be effective inspection tools at classification yards. **EP-101.**

Dragging equipment detectors have a self-restoring feature with an option to illuminate wayside lights to alert train crews of detector actuation. **EP-102.**

DATA PROCESSING

Below are listed products and services exhibited at the Data Systems Division, AAR, annual meeting. To obtain more information circle EP numbers on the white reader service card at the end of this section.

American Telephone & Telegraph

(Please turn page)

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY MAIL
First Class Permit No. 31775, Chicago, Illinois

Postage Will be Paid by Addressee

RAILWAY SYSTEM CONTROLS
29 EAST MADISON STREET
CHICAGO, ILLINOIS 60602
ATTN: R. W. McKNIGHT

RAILWAY AGE

RAILWAY SYSTEM CONTROLS

Circle numbers for more information.

1	2	EP-1	EP-2	EP-3	EP-4	EP-5	EP-6	EP-7	EP-8	EP-9	EP-10
EP-11	EP-12	EP-13	EP-14	EP-15	EP-16	EP-17	EP-18	EP-19	EP-20	EP-21	EP-22	EP-23	EP-24	EP-25
EP-26	EP-27	EP-28	EP-29	EP-30	EP-31	EP-32	EP-33	EP-34	EP-35	EP-36	EP-37	EP-38	EP-39	EP-40
EP-41	EP-42	EP-43	EP-44	EP-45	EP-46	EP-47	EP-48	EP-49	EP-50	EP-51	EP-52	EP-53	EP-54	EP-55
EP-56	EP-57	EP-58	EP-59	EP-60	EP-61	EP-62	EP-63	EP-64	EP-65	EP-66	EP-67	EP-68	EP-69	EP-70
EP-71	EP-72	EP-73	EP-74	EP-75	EP-76	EP-77	EP-78	EP-79	EP-80	EP-81	EP-82	EP-83	EP-84	EP-85
EP-86	EP-87	EP-88	EP-89	EP-90	EP-91	EP-92	EP-93	EP-94	EP-95	EP-96	EP-97	EP-98	EP-99	EP-100
EP-101	EP-102	EP-103	EP-104	EP-105	EP-106	EP-107	EP-108	EP-109	EP-110	EP-111	EP-112	55		

NAME _____

TITLE _____ RAILROAD _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

EXHIBIT IN PRINT

(Continued from preceding page)

Co. (Booths 9-11)—See listing under Communications & Signals.

Data Action Corp. (Booth 2)—Model 150 magnetic data inscriber is a key-to-tape device for off-line data preparation. **EP-103.**

The 220 Typescribe records source data on magnetic tape at the same time it is typed on an IBM Selectric typewriter. **EP-104.**

The 1500 data editor performs comprehensive editing and validating of input data to make it completely ready for computer processing. **EP-105.**

Delta Data Systems Corp. (Booth 25)—
TelTerm 33 is a teletypewriter-compatible CRT terminal. **EP-106.**

GTE Information Systems, Inc. (Booths 26-29)—See listing under Communications & Signals.

GTE Lenkurt Electric, Inc. (Booths 23-24)—Type 26C data set has a capacity of 150 to 2400 bits/sec transmission. **EP-107.**

For information about the 25D telegraph transmission system, 26D data set, and 960B journal data transmission system see listings under Communications & Signals.

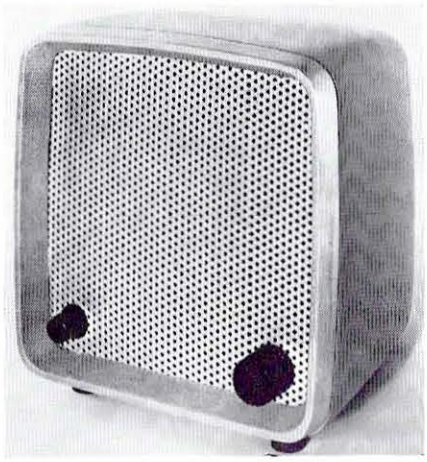
IBM Corporation. (Booths 13-15)—The 3735 programmable buffered terminal is especially suitable for preparation of waybills, advanced consists and switch lists. **EP-108.**

Sycor, Inc. (Booths 7-8)—Input/output terminals have format control. **EP-109.**

Car identification has test labels (EP-110)

KarTrak test labels are a set of 12 calibrated labels on eight label plates. Each label is designed to test one or more parameters of the scanner and label acceptance logic. To verify acceptable equipment performance each label is scanned, per instructions, and the decoder output is noted.

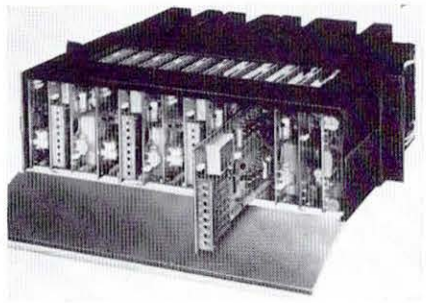
The label gate is required for proper use of the test labels. The gate chassis plugs into the KarTrak decoder test set connectors. When used with the test labels, the label gate functions to limit the number of scans of the stationary test label. Only two label scans are used on the "input" and "Recognition" series labels, thus simulating a maximum speed train; and 100 scans are used on the "Rejection" series labels to provide an adequate logic test. *GTE Information Systems, Inc.*



Loudspeaker set has 2 watts rms (EP-111)

The 8106 loudspeaker set provides two watts rms to drive a self-contained speaker. A regulated power supply, along with an automatic gain control circuit ensures consistent operation from −21 to −56 volt battery, without strapping.

The 8106 loudspeaker also features a modified "C" message filter to attenuate noise outside the pass band, ground disable to quiet the set during unused periods, and both 10k and 40k ohm bridging inputs. *Wescom, Inc.*



Multiplex is for low density line (EP-112)

The MC-3001 low density, all solid state SSBSC multiplex equipment provides one to 84 non-synchronized voice channels. Each channel contains a crystal controlled channel oscillator, which permits each channel to operate independently of any common carrier generation equipment.

Identical and interchangeable channel modem cards provide maximum flexibility with minimum spares. A unique vf limiter provided as standard equipment on all channel modems protects against intermodulation, false signaling and accidental high level test tone injection.

All active circuits in the MC-3001 equipment are placed on plug-in cards for optimum flexibility and simplified maintenance or repair. *Motorola Communications & Electronics Inc.*

RAILWAY AGE **RAILWAY SYSTEM CONTROLS**

Circle numbers for more information. 1 2 EP-1 EP-2 EP-3 EP-4 EP-5 EP-6 EP-7 EP-8 EP-9 EP-10
EP-11 EP-12 EP-13 EP-14 EP-15 EP-16 EP-17 EP-18 EP-19 EP-20 EP-21 EP-22 EP-23 EP-24 EP-25
EP-26 EP-27 EP-28 EP-29 EP-30 EP-31 EP-32 EP-33 EP-34 EP-35 EP-36 EP-37 EP-38 EP-39 EP-40
EP-41 EP-42 EP-43 EP-44 EP-45 EP-46 EP-47 EP-48 EP-49 EP-50 EP-51 EP-52 EP-53 EP-54 EP-55
EP-56 EP-57 EP-58 EP-59 EP-60 EP-61 EP-62 EP-63 EP-64 EP-65 EP-66 EP-67 EP-68 EP-69 EP-70
EP-71 EP-72 EP-73 EP-74 EP-75 EP-76 EP-77 EP-78 EP-79 EP-80 EP-81 EP-82 EP-83 EP-84 EP-85
EP-86 EP-87 EP-88 EP-89 EP-90 EP-91 EP-92 EP-93 EP-94 EP-95 EP-96 EP-97 EP-98 EP-99 EP-100
EP-101 EP-102 EP-103 EP-104 EP-105 EP-106 EP-107 EP-108 EP-109 EP-110 EP-111 EP-112 55

NAME _____

TITLE _____ RAILROAD _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

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BUSINESS REPLY MAIL

First Class Permit No. 31775, Chicago, Illinois

RAILWAY SYSTEM CONTROLS
29 EAST MADISON STREET
CHICAGO, ILLINOIS 60602

ATTN: R. W. McKNIGHT

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SPECIAL REPORT:
COORDINATED ASSOCIATIONS

Sherman House, Chicago

September 13-15

- Programs
- Product Showcase

The annual meetings of the Coordinated Associations at Chicago's Sherman House annually involve the Air Brake Association, Car Department Officers Association, Locomotive Maintenance Officers Association and the Railway Fuel & Operating Officers Association. No equipment exhibits are scheduled during the 1971 sessions.

ANNUAL LUNCHEON
Wednesday, September 15

Address—C. E Crippen, president, Milwaukee Road.

A service
by the
Simmons-Boardman
Railway Age
Group

AIR BRAKE ASSOCIATION

Monday, September 13
Morning Session—10 a.m.

Joint meeting with CDOA

Address—J. M. McGuigan, chief mechanical officer, Penn Central.

Report—Double Acting Slack Adjusters Are Necessary, Slack Adjusters Manufacturers Engineering Committee.

Afternoon Session—2 p.m.

Westcode Electropneumatic Brake for Commuter and Rapid Transit Cars—R. J. Dixon, Westinghouse Brake & Signal Co.

Computer Simulation for Train Braking Performance—F. J. Gregda, Wabco.

The Element of Time in Air Brake Operation and Maintenance—Pittsburgh Air Brake Club.

Tuesday, September 14
Morning Session—9 a.m.

Combination Disc and Tread Braking on M-U Cars—Manhattan Air Brake Club.

Hydropneumatic Braking—T. H. Engle,

Measurement of Brake Shoe Forces—St. Louis Air Brake Club.

Contribution of Empty and Load Brake Equipment to Increased Braking Level—C. D. Wright, Westinghouse Air Brake.

Locomotive Air Compressor—Operation and Maintenance—Canadian A. B. Club.

Questions and Answers—L. A. LaRotonda, air brake instructor, Rock Island.

Wednesday, September 15
Morning Session—9 a.m.

Freight Car and Train Brake Tests—How and Why?—Central Air Brake Club.

Committee Reports—D. E. Whitney, gen. supt. brake systems, BN.

CAR DEPARTMENT OFFICERS ASSOCIATION

Monday, September 13
Morning Session—10 a.m.

Joint meeting with ABA (see above).

Afternoon Session—2 p.m.

Address—President W. A. Mullen, general mechanical superintendent, passenger cars, Penn Central.

Report—Controlled Temperature & Atmospheric Systems. Chairman: D. W. Long, engineer, equipment maintenance, Pacific Fruit Express.

Report—AAR Loading Rules. Chairman: J. W. Bell, chief interchange inspector, Joint Inspection Bureau, St. Louis-E. St. Louis Terminal District.

Tuesday, September 14
Morning Session—9 a.m.

Report—Repair Track and Train Yard Operation. Chairman: L. T. Calvin, assistant mechanical officer-car, GTW.

Slide Presentation—Training Program, R. E. Bell and J. A. Alt, C&O/B&O.

Report—Protective Coating. Chairman C. W. Seagren, Shippers Car Line.

Film Presentation—Airless Spray Advantages and Limitations, J. Adams, Binks.

Afternoon Session—2 p.m.

Report—TOFC/COFC. Chairman: H. C. Ludwig, supt. car department, Reading.

RPI/AAR Film Presentation, Tank Car Safety and Research Project. E. Phillips, Union Tank Car.

Report—Freight Car Equipment. Chairman: R. D. Ratliff, superintendent car equipment, Western Maryland.

Film Presentation—Multi-Level Shipping.

Wednesday—September 15
Morning Session—9 a.m.

Report—Wheels, Axles and Wheel Shop Practices. Chairman: E. Dozier, general foreman, wheel shop, Missouri Pacific.

Report—Car Lubrication. Chairman: M. L. Larkin, engineer of tests and chief chemist, Erie-Lackawanna.

Comments—R. Byrne, director research, Association of American Railroads.

Report—Passenger Mass Transit, Commuter Equipment. Chairman: M. J. Chandler, manager m-u car maintenance, PC.

LOCOMOTIVE MAINTENANCE OFFICERS ASSOCIATION

Monday, September 13
Morning Session—10 a.m.

Address—President G. W. Niemeyer, mechanical superintendent, Texas & Pacific.

Report—Fuel and Lube Oil. Topic: Recommended Lubricating Oil Practices for Interchange Locomotives. Chairman: D. L. Bowman, mechanical inspector, N&W.

Afternoon Session—2 p.m.

Address—J. G. German, assistant vice president-engineering, Missouri Pacific.

Report—Diesel Mechanical Maintenance. Topic: Developments to Improve Locomotive Operation and Mechanical Maintenance. Chairman: N. A. Buskey, superintendent of shops, C&O/B&O.

Tuesday, September 14
Morning Session—9 a.m.

Report—Diesel Material Standardization and Control. Topic: Material Standardization and Related Locomotive Interchange. Chairman: J. W. Gann, assistant chief mechanical officer, Rock Island.

Report—Shop Equipment. Topic: Evaluation of Shop Equipment and Modern Production Techniques. Chairman: C. M. Smith, senior mechanical engineer-locomotives, Penn Central.

Afternoon Session—2 p.m.

Report—Electric M-U Train Maintenance. Topic: Improved Wiring Standards and Spike Suppression. Chairman: R. P. Turnbull, manager-mechanical engineering, Long Island.

Report—Diesel Electrical Maintenance. Topic: Optimum Locomotive Electrical Maintenance Policies. Chairman: F. D. Bruner, assistant general superintendent motive power and machinery, UP.

Wednesday, September 15
Morning Session—9 a.m.

Report—New Developments in Motive Power Maintenance. Topic: Locomotive Availability Measurement System. Chairman: J. Taggart, system mechanical officer motive power, Canadian National.

Report—What's Your Problem. Chairman:

J. J. Dwyer, engineer, environmental control, C&O/B&O.

RAILWAY FUEL AND OPERATING OFFICERS ASSOCIATION

Monday, September 13
Morning Session—10 a.m.

Address—President L. S. Lawrence, trainmaster-road foreman, Santa Fe.
Address—J. S. Reed, president, Santa Fe.
Safety—Film and Remarks. J. G. German, assistant vice president-engineering Missouri Pacific.
Engineer Training—R. A. Hamilton, road foreman engines-chief air brake examiner, Long Island; C. R. Dunne, road foreman engines, Long Island.

Afternoon Session—2 p.m.

Locomotive Operation and Train Handling—Introduction: A Four-Part, Two-Day Program—H. C. Eck, general supervisor locomotive operation, C&O/B&O.
Part I: Influence of Train Handling on Derailment Tendency. T. B. Wagner, district road foreman engines, SP.
Panel Discussion—Operating Rules.
Chairman: J. D. VanCleave, manager operating rules, Penn Central.

Tuesday, September 14
Morning Session—9 a.m.

Part II: Modern Train Handling Techniques in Canada. R. W. Cole, regional master mechanic, Canadian National.
New Approach in Clarifying Train Handling Rules. H. C. Eck, C&O/B&O.
Wheel Contour. N. A. Berg, Griffin Wheel.
Part III: Use of Strain Gauge as a Tool to Improve Train Handling. G. Goldston, system general road foreman, Southern.
Expediting Engineers Training. T. R. Broom, general road foreman engines, Florida East Coast.
Severe Weather Operations. M. A. Davis, chief road foreman, Delaware & Hudson.

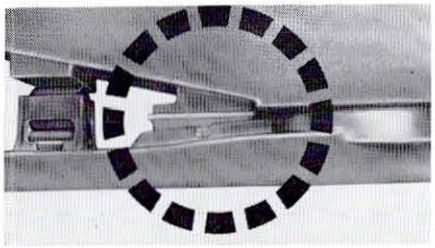
Afternoon Session—2 p.m.

Investigation Procedures. I. L. Fardal, superintendent, Soo Line.
ABD Equipment and Its Effects on Train Operation. D. G. Blaine, Wabco.
Address—R. D. Spence, vice president operation, Southern Pacific.
Part IV: Modern Passenger Train Handling. R. A. Hamilton, road foreman engines-chief air brake examiner, Long Island; W. E. Copeland, regional road foreman, Penn Central; L. J. Deck, air brake examiner, Penn Central.

Wednesday, September 15
Morning Session—9 a.m.

Wheel and Rail Loadings from Diesel Locomotives—Influence of Dynamic Brake Handling on Derailment Tendency. H. A. Marta, Electro-Motive.
Responsibility of Locomotive Inspection, Regulations and Changes. A. T. Ireland, locomotive inspection supervisor, FRA.
Responsibility of Road Foreman-Traveling Engineers. J. C. Martin, manager technical training, Illinois Central.

PRODUCT SHOWCASE



Resilient stabilizer

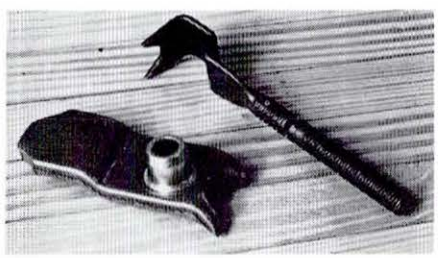
C-PEP, a resilient Center Plate Extension Pad, has been developed to alleviate the low-speed swaying of freight cars that produces abnormal stresses on center plates, resulting in metal fatigue and fractures. In high-speed operation it can reduce truck "hunting" or "shimmy." The Pad augments the bearing area of the center plate with wedge-shaped steel-and-elastomer sandwiches which cushion the vertical loads formerly borne by the center plate alone. Units have been field tested on more than 4,000 unit train 100-ton cars without lift off derailments. Trucks inspected after more than 250,000 miles have shown but minimal wear. There are no wearing parts and no adjustments after installation. It is said to be a fail-safe device. Standard Car Truck.

Circle Reader Service No. 70.

Corrosion inhibitor

Phosphate and chromate-free Enprox 555, a liquid organic water treatment material, is said to inhibit corrosion, scale and sludge build-up in industrial water systems without creating a disposal problem. It is nonpolluting; inhibits the formation of calcium, magnesium and barium scale deposits in water; and has wide use in cooling water recirculating systems such as heat exchanges and cooling jackets. It is also used in humidifiers and evaporators; is effective over a broad pH range; and effective at high temperatures. The liquid may be introduced into system either manually or by automatic metering equipment. Oakite Products, Inc.

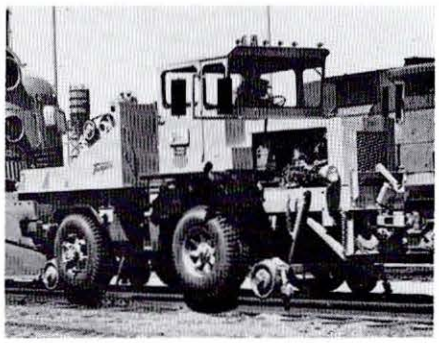
Circle Reader Service No. 71.



Floorbolt

A drill-less floor fastener which eliminates bolt heads inside a car and produces no metal heat-flow paths from the interiors of refrigerated or insulated cars, consists of a bolt and collar. It is installed with conventional Townsend tools. The bolt can be supplied to fit various configurations of tongue-and-groove lumber of different thicknesses. Without drilling, the bolt may be located in the most advantageous position with relation to underframe stringers and side sills. Since the top of the bolt is enclosed within the tongue-and-groove joint, it is unnecessary to caulk over it as is done with other fasteners in insulated cars. There is no countersinking operation for cars which carry ladings that might be damaged by protruding bolts. Townsend

Circle Reader Service No. 72.



Tractor/switcher

The 12-ton Kal Trac vehicle is a diesel-powered, four-wheel-drive unit designed for the movement of locomotives and rapid transit cars when they may not be operated under their own power around shop facilities. It has both rubber tires for road movement at up to 40 mph and retractable flanged wheels for rail movement. On rails, it is capable of moving up to 1,000 tons and can transfer a portion of the weight of the trailing vehicle to its own wheels to increase tractive effort. It is fitted with railway couplers at both ends and has an enclosed operator's cab. Tamper, Inc.

Circle Reader Service No. 73.

Covered hopper outlet

An adjustable pneumatic outlet for cars in plastics service is designed to give easier, faster cleaning without disassembly or removal of the control tube. The outlet retains the high performance of the rotary-tube design, providing optimum flow control and complete clean-out for the full range of plastics pellets and powders. Control tube operation is easier through a reduction torque required for rotation. Contamination-free shipments are assured through the outlet's air-tight and pressure-retention capabilities. It is available with fluidization for plastics powders requiring it. The control tube adapter handles have been strengthened and a simpler, more positive locking device has been added. Shippers Car Line.

Circle Reader Service No. 74.

Precision analyzer

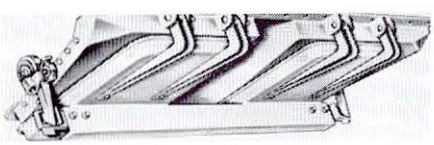
The EIL precision analyzer, primarily designed for trouble shooting on diesel-electric locomotives, is a highly portable meter featuring a mirrored scale that is easily read in adverse light conditions. The meter's 500-volt range is for testing or adjusting high-voltage circuits such as transition and a 150-volt range is for auxiliary generator voltage settings and trouble-shooting in control circuits. For total capability, the meter has several millivolt ranges to read high-current areas. A check on an AR10 alternator at 6000 amps can be made using a portable shunt. Milliamp readings permit analysis of small coils and wheel-slip settings. The unit may be used making inbound checks on units scheduled for maintenance. Virtually 100% solid-state overload protection is provided. It has a 0.5% full scale accuracy. The analyzer has separate binding posts for each voltage and current range and is self-contained in a heavy-duty formica carrying case with compartment for 8-ft test leads. It weighs 6¼ lb. EIL Instruments.

Circle Reader Service No. 75.

Energy absorber

A device capable of absorbing "tremendous amounts" of energy simply and efficiently has been suggested as a car cushioning back-up unit. It functions to dissipate large amounts of energy in small spaces and can also be a force-limiting fastener, replacing torqued bolts. The unit is a threaded high-strength-steel rod and simple die. When the rod is pulled through the die, plastic flow of metal during drawing absorbs and dissipates energy. The manufacturer says any desired force/deflection characteristic can be produced. Omark Industries.

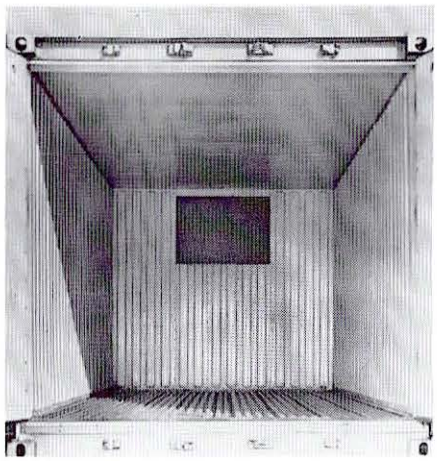
Circle Reader Service No. 76.



Hopper door lock

Material loss is minimized through the use of the pre-assembled DUOLOC open top hopper door locking mechanism. Designed for both new and rebuilt cars and for application to standard cast steel or fabricated frames, the lock requires minimum manual effort in locking and unlocking. After the safety latch is moved out of the way, the door can be opened by either inserting a bar under the hook (1) or into the lock's socket (2) and rotating the cam section. To lock, the door is swung closed and the cam is rotated back to its original position (3). Then the safety latch is secured. Keystone Railway Equipment Co.

Circle Reader Service No. 77.



Liner panels

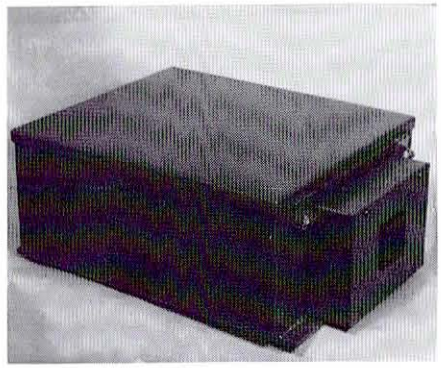
Three new standard sizes of fiber glass reinforced plastic Airflow ribbed liner panels — two for application in containers, one for reefer cars — feature 2-in. flat flanges on the bottom. Available in standard rib or inverted rib configutations, the panels measure 83, 87 and 117 inches in length overall, with a standard width of 49½-in. The three new panels raise the total number of Airflow panels available to 31. Molded Fiber Glass Co.

Circle Reader Service No. 78.

Thickness meter

A battery-operated pocket-size ultrasonic gage can determine the thickness of materials. The digital display excludes erroneous readings and allows readings to be taken even in darkness. Wall thicknesses from 1.2 mm to 12 in. can be gaged to an accuracy of within 0.1 mm. A crystal-controlled frequency selector produces the signal on which the material is checked. The unit is recommended for quick and recurrent inspection measurements. Krautkramer Ultrasonics.

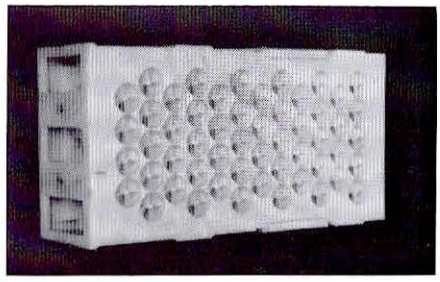
Circle Reader Service No. 79.



Battery charger

A series of Type EMBC battery chargers, developed for pocket-plate nickel-cadmium storage batteries on equipment — including rapid-trasit cars, operate from a nominal input voltage of 45 volts a-c and will draw 50 amp maximum to restore a fully discharged battery in 6 hours. The charger senses d-c voltage in such a way that it connects the battery to the trainline whenever its voltage drops below a predetermined level, disconnects the battery from the load when trainline voltage returns to normal, and isolates the battery from loads during charging. The charger tends to prolong battery life by a demand pulse charging mode which compensates for such conditions as temperature, unbalanced cells and shorted cells. Fail-safe features protect against overcharging and output short circuits. Gulton Industries.

Circle Reader Service No. 80.



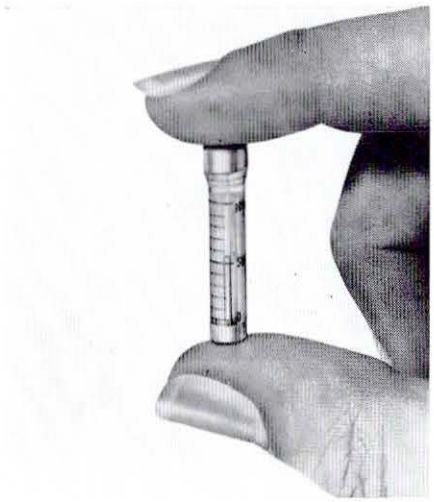
Air cleaner

A primary spin-type plastic air cleaner has been developed to incorporate small size, light weight, high efficiency, low pressure drop and self-cleaning characteristics. The 10- x 18- x 6-in. unit can be mounted in three positions and may be used in conjunction with secondary filters to improve contaminant removal. The cleaner is 95% efficient on particles of 8 microns or larger. Each unit is capable of cleaning 1,200 to 2,000 cfm and they may be applied in parallel to meet any requirements. General Electric.

Circle Reader Service No. 81.

Elapsed time indicator

A tamperproof elapsed time indicator for low-cost automatic logging of operating hours on locomotive traction motors, air conditioners and refrigeration units, is a small electro-chemical device producing a permanent record. Total hours are recorded by the increased length of a bright



copper column which is easily read on a calibrated time scale. The 1-¼in. indicators are available for 1,000, 2,000, 5,000 and 10,000 hours. Basic elements are a precision glass capillary tube, a heavy-duty electrolyte, and metal electrodes, all sealed to produce a unit capable of resisting shock and vibration. Application of current electrochemically transfers copper from the anode through the tube and deposits it at the cathode. The patented electrolyte permits operation from minus 35 deg F to 150 deg F. The timer may be mounted in either an open fuse clip or a modular package. Indicators can also be supplied for direct wiring to printed circuits. Fredericks Co.

Circle Reader Service No. 82.

Shop lighting

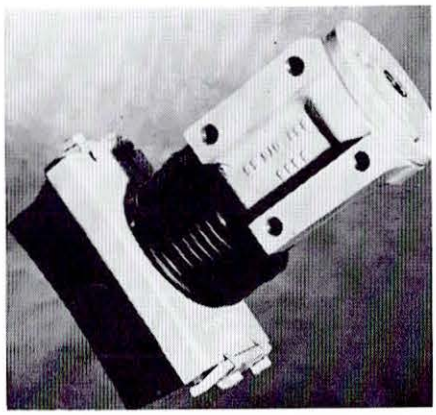
An installation of 484 Metalarc lamps in a carbuilder's 76,000-sq ft paint shop has increased lighting levels nearly fourfold while reducing energy costs almost $7,000 annually. The 400-watt Metalarc lamps replaced a similar number of 500-watt incandescent units which produced about 10 footcandles on carsides. The new units provide a minimum of 35 footcandles, permitting better paint matching and coverage. The lights are 20 ft above the floor in a grid pattern on 20 x 15½ ft centers in Holophane 611 fixtures. Cars are prepared for painting, painted and stencilled in the area. The builder is making other installations in fabricating and wheel shops. GTE Sylvania.

Circle Reader Service No. 83.

Plastic window

Lexan MR-4000 mar-resistant sheet has withstood laboratory tests simulating 20 years of railroad car washing without visible change in appearance. Ordinary clear plastic subjected to the same test develops serious surface marring. The new material is designed for transparent windows for the transportation industry and is available in all popular gages and sizes. It carries a three-year guarantee against breakage. MR-4000 is easy and economical to install; it will not chip or splinter. In one test, an acrylic experienced a brittle break with a 1.7 ft lb impact; MR-4000 did not break when subjected to 200 ft lb. Plastics Department, General Electric.

Circle Reader Service No. 84.



Tread scraper

The pneumatic scraper serves to clean the treads of wheels of disc-braked railway equipment where there is no polishing action by brake shoes. Scraping is said to be essential in preventing any drop in frictional characteristics between wheel and rail. The unit is easily installed in the truck, operates only during braking, and produces negligible tread wear. The scraper is basically an air cylinder with a scraping block holder swivel mounted at the front of the piston rod. A coil spring in the cylinder returns the piston. The scraper remains vented and released in the unbraked condition. The scraping is initiated with a brake application. Adjustments are provided to compensate for tread wear. Bergische Stahl-Industrie KG.

Circle Reader Service No. 85.

Sanitary cleaner

Foremost 4555, supplied in highly concentrated form, may be diluted to any necessary strength for elimination of toilet odors. Its two-fold chemical function masks odors and stops growth of odor-forming organisms. It may be used manually or through automatic dispensing equipment. It will not damage the toilet. Delta Chemical Corp.

Circle Reader Service No. 86.

Self-Contained toilet

The Newmatic, a self-contained, air-operated toilet meeting prescribed sanitation requirements for public transportation has

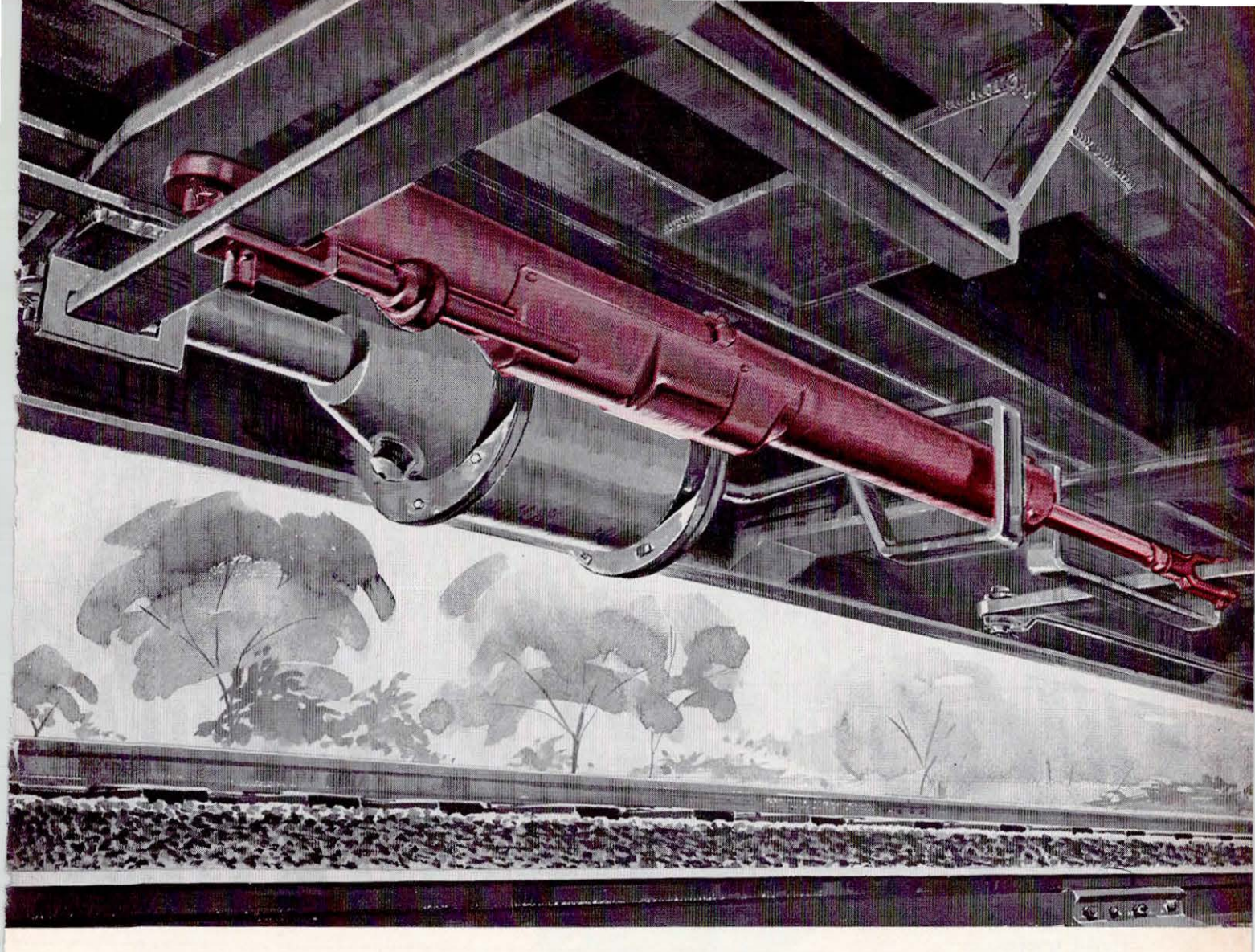
only one moving part, a diaphragm stroke pump. The totally pneumatic operating principle eliminates any need for electrical connections, motors, pumps or timers. A push button actuates an automatic flushing cycle and re-sets for the next use in a few seconds The simplicity of mechanism is said to minimize operating and maintenance costs. The compact design requires minimum floor space; no auxiliary water supply or waste holding tank is needed. Vapor Corp.

Circle Reader Service No. 87.

Temperature control

Interchangeable heating or cooling cartridges have been developed for quick, simple insertion in ISO or domestic containers or in highway trailers. The Thermotrol Cartridge fits into a receptacle built into the container with a minimum of loss of cargo cube. It is easily accessible for replacement or service from the side on road or rail. In one movement, the diesel-powered Model CH17 Heaters were installed in containers of onions moving from an interior Canadian point to a port where the units were removed and placed in other containers which had just been taken from ships for return to origin points. The two models are part of a projected range of cartridges for heating, cooling, venting and humidity control Galt Equipment, Ltd.

Circle Reader Service No. 88.



Why do you need Slack Adjusters ?

Here's Why!... *When correctly installed and maintained, Ellcon-National 2000-DJ Slack Adjusters automatically adjust brake rigging for shoe wear and maintain proper piston travel!*

Further Benefits...

- Reduce the number of freight cars previously cut out to rip tracks for rigging adjustments necessitated by shoe wear. *Interchange time is reduced!*
- Minimize the unsafe, time-consuming practice of men crawling under cars to manually adjust brake rigging when replacing brake shoes. *Manpower and time are saved!*
- Provide constant brake shoe pressure.
- When all cars are equipped and properly maintained, the shortest possible stopping distance will be realized!

For additional information, request our New 16 page Slack Adjuster bulletin.

ELLCON NATIONAL INC.

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Jackson
has been
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and improving

and improving

our track tamping
equipment
... until today's
Jackson Tampers
set the quality
standard
around
the world.

We are even
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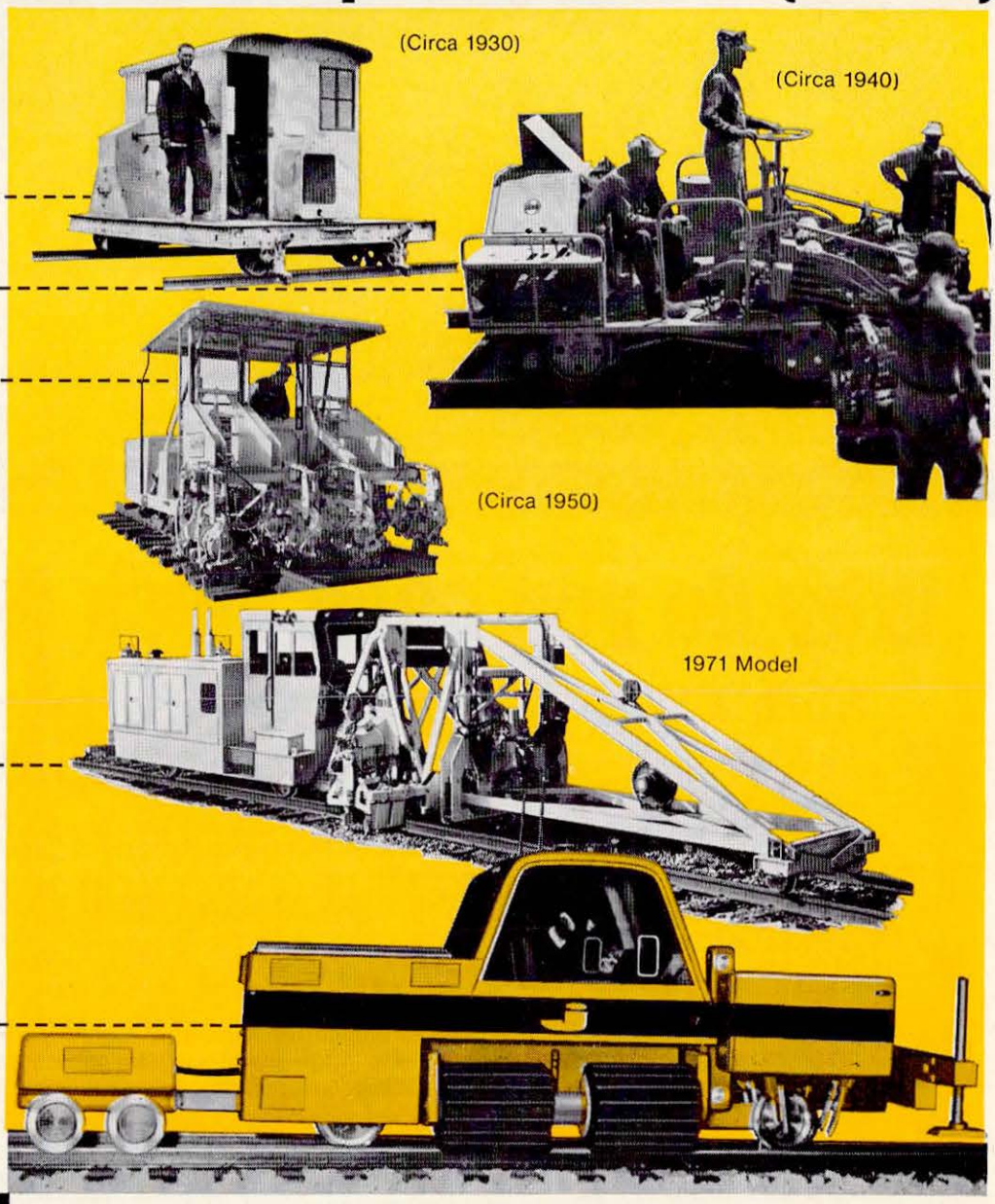
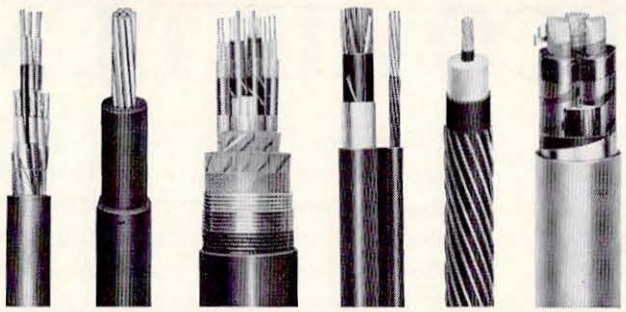
Jackson Tamper
you will be
using in 1980!



Write for detailed brochure on the latest Jackson Tampers.

Jackson
VIBRATORS, INC. 332 S. Michigan Ave. • Chicago, Illinois 60604 • Telephone: (312) 922-6604
Circle 57 on card opp. page 60

We've been working on the railroad.



General Cable has been a major supplier to the railroad industry since 1882.

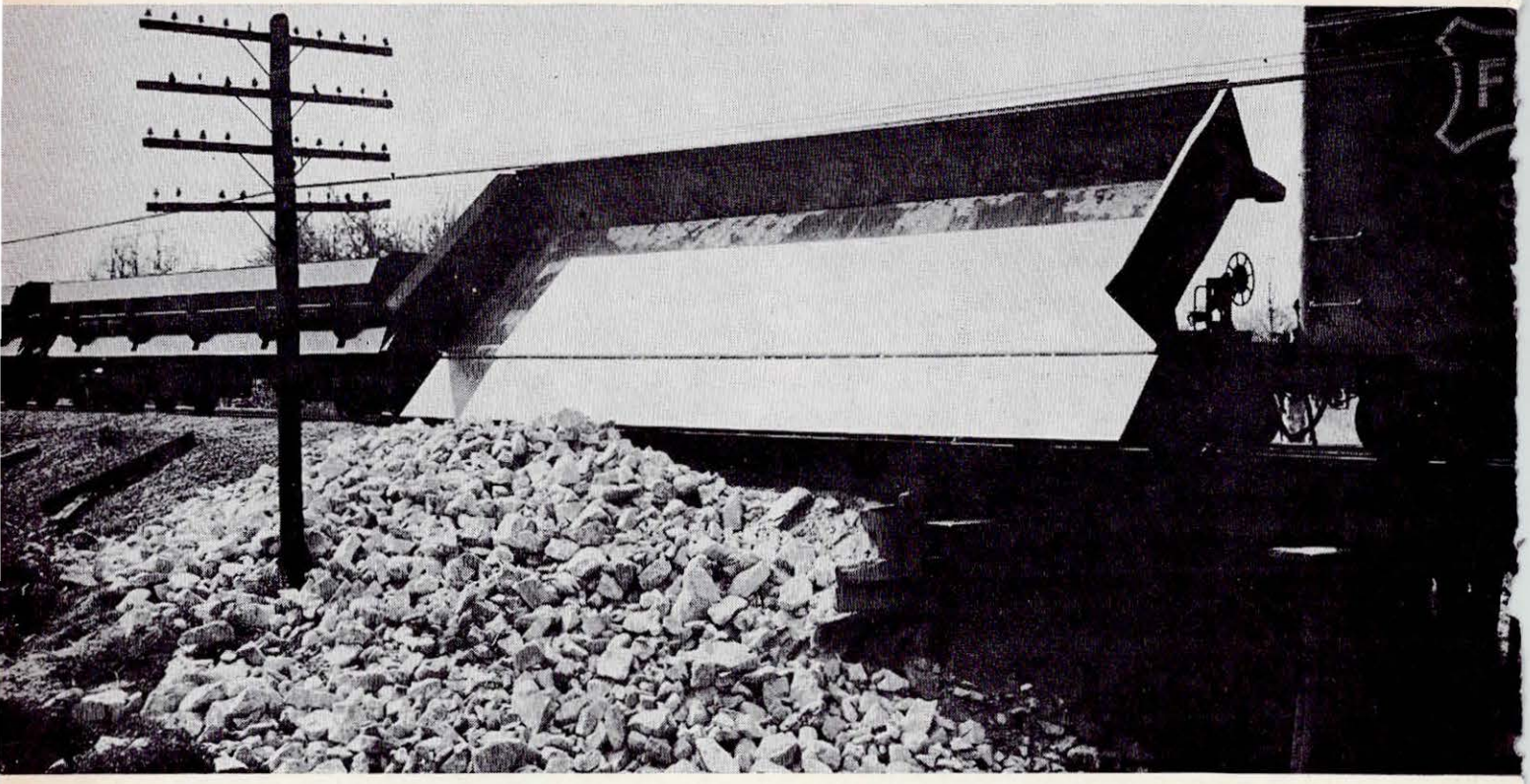
We supply a full line of communications wire and cable. Coaxial cables. Control and signal cables. Power cables. Trolley wire. And we supply a great deal of supporting equipment as well. Like support hardware for Figure 8 Wire and Cable, Cross Over Clamps, Suspension Clamps and other cable support items from Diamond. Cable pressurization equipment from Puregas. Tie splints, transposition brackets, galvanized Line Wire and galvanized Guy Strand from Indiana Steel and Wire.

But quality products aren't all we supply. We provide General Cable know-how and experience to help you choose, design and specify the right product for the job.

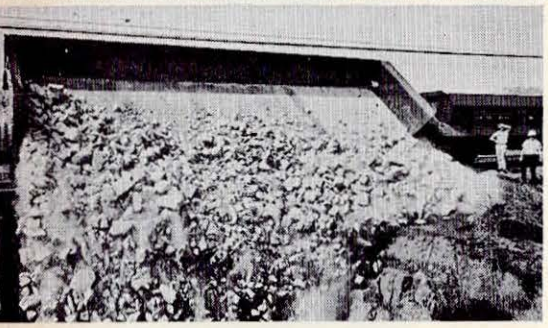
So call on General Cable whenever you need information, products or service. And you'll always be on the right track. Write: General Cable Corporation, Section 600-24, 730 Third Avenue, New York, N.Y. 10017.

General Cable

FRISCO "SHORTSTOPS" MAINTENANCE OF WAY



WITH DIFCO AIR DUMP CARS*



Frisco found the answer for fast, easy and economical way maintenance with DIFCO Air Dump Cars! Without the need for manning and maneuvering special work trains and the delay of dodging heavy mainline traffic, these husky, heavy-duty units can be spotted and made-up in through trains to handle big, tough jobs in hard-to-reach areas.

Like the operation pictured in the accompanying photographs. Four 50 cubic yard, 100-ton capacity cars—loaded with rip rap more than 100 miles away and pulled at normal freight train speeds in a regularly-scheduled train—were dumped at each end of a bridge to restore washed-out approaches. With a short stop to accommodate smooth, effortless 8-second per car dumping time, the train continued on its way—right on schedule.

Many railroads today are enjoying the advantage of DIFCO'S 100-ton capacity Air Side Dump Cars—moving up to twice the payload of smaller capacity cars to minimize lost time and rehandling of fill and other maintenance materials. To get detailed information on DIFCO Air Dump Cars for your requirements, call, wire or write today. We'll answer promptly.

Remote Controlled DIFCO Loco Trains • DIFCO Payload Locos • Differential Air Dump Cars • "AXLESS" Truck Mine Cars • Locomotives • Rotary Car Dumpers • Wagon Trains

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DIFCO

*Patented

D711

Circle 20 on card opp. page 60

The Foster Trackage Package:

From frogs and switches to guard rails, switch stands, crossings and switch lamps– call us The Turnout Terminal.

Foster has good reason to be called The Turnout Terminal: We're a one-stop shopping center for all your turnout needs. Whether your track handles light, medium or heavy traffic, we can supply frog and switch material in a wide variety of constructions and gauges to meet all A.R.E.A. specifications. We can also meet any special industrial siding or in-plant trackage requirements. And our turnout accessories are delivered properly matched, ready to install.

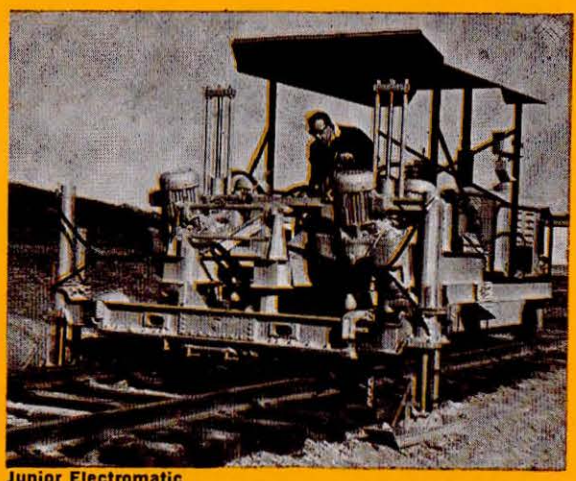
Foster maintains a nationwide network of sales offices with rail specialists to help you. Let us.

For more information, send for our informative brochure on frogs, switches and turnouts. Write L. B. Foster Co., Dept. 1516-9, Seven Parkway Center, Pittsburgh, Pa. 15220.

FOSTER

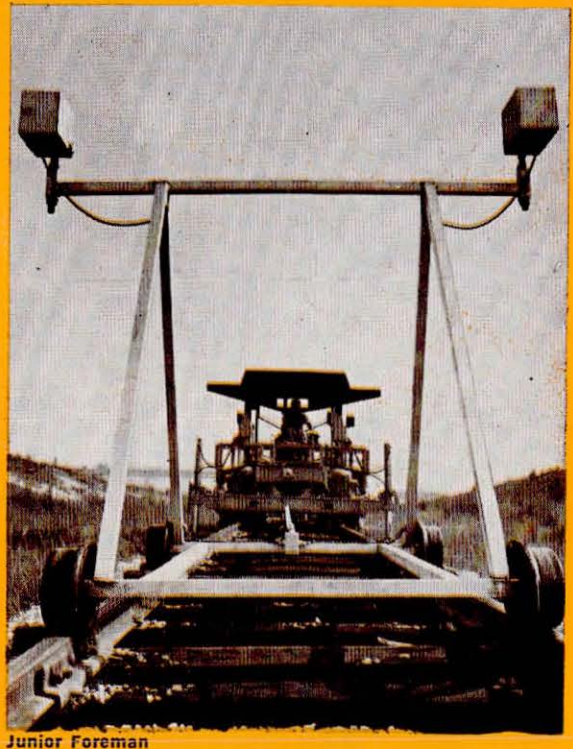
L.B.FOSTER COMPANY

Circle 27 on card opp. page 60



Junior Electromatic

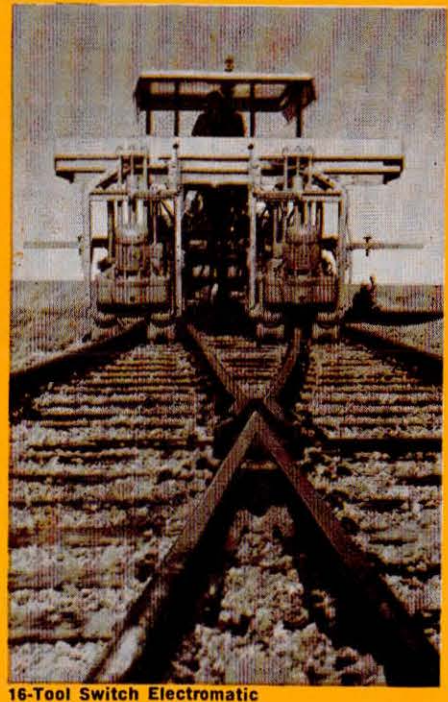
Heavy-Duty Brush Cutter



Junior Foreman

Ballast Equalizer

Autojack Electromatic Autoliner



16-Tool Switch Electromatic

The world's most advanced track maintenance equipment.

From Tamper.

Tamper designs and manufactures a complete line of railway track maintenance equipment. It's all backed by specialized after-sales service. And it's all designed for automatic, simple operation. For instance:

Autojack Electromatic Autoliner

It requires only one man to lift, level, line and tamp 1350 feet of track an hour under normal working conditions. This powerful, high speed, heavy-duty, completely automatic precision tamper maintains most of North America's main-line track. Precise control or lift on both rails using infrared beams for leveling (Delta System). Automatic cross leveling within 1/16". Lining takes place simultaneously and automatically with leveling and tamping. Automatic, continuous operation for tangent, transition and curve track. Needs no plotting of transitions or curves, because machine computes as it runs for best transition. Automatic cycle assures uniform results. Simple and inexpensive maintenance. Skin lifts to 6-inch lifts made with equal efficiency.

16-Tool Switch Electromatic

It tamps the complete switch, turnout, crossover or ladder track with production tamper speed and pattern, with only one operator. Workheads designed to move laterally, independently or simultaneously. Doubles as a production tamper—for smoothing and spotting—and as the second machine in a tandem operation. Can be equipped with optional jacks, cross level indicator, remote control, Junior Foreman and swivel deck frame.

Junior Foreman

The most recent attachment to the Junior or Switch Electromatic Tampers incorporates an infrared light beam referencing system for surfacing and lining. With the Junior Foreman, these machines become one-man operations for surfacing out of face, for smoothing and spotting and joint peaking. Inexpensive and economical operation, simple machine maintenance, highest accuracy.

Junior Electromatic

The Junior is a heavy-duty, 16-tool, compact, precision utility tamper with power to do the job. Handles the toughest jobs of spot surfacing and between cycle maintenance. Designed for work behind tie gangs, on branch lines, out-of-face work on secondary lines and as an economical second machine in a tandem tamping program. Can be equipped with optional jacks, cross level indicator, sighting, remote control and Junior Foreman.

Heavy-Duty Brush Cutter

The Kal-Trac features on-off track design with hydraulically operated On-Rail wheels. Heavy-duty cutter clears right-of-way growth up to 12" diameter trees. Cutters operate simultaneously or one side at a time, each making a 7-foot wide cut in either direction. Clears a swath 50 feet wide (25 feet from center line of track). Tamper Brush Cutters are available in various configurations and are suitable for mounting on many types of equipment.

Ballast Equalizer

The Model BE-17 features split plow and track sweeper. The large capacity side dressing attachment dresses shoulder material in either direction and incorporates tie end plow, rooter and scarifying teeth. Front directional plow can plow material out of or into the track area or transfer from one side of the track to the other. GM Diesel powered, four-wheel enclosed drive, power shift torqmatic transmission with inching control in all ranges. Rotary snow auger available.

There's much more of the Tamper line. And our equipment is now available for surfacing and lining contracts. Complete information is available on request.

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MEMBER RPI

Railroads outline their approaches to computer security

"When the earthquake hit us last February, a disc file walked across the room—pulling its control and power cables out at the plug-coupler. There was no damage, so we just moved the file back to its original place and coupled it up. It worked fine," reports one railroad's data processing supervisor at Los Angeles.

Most other computer users in the area found that loss of power was the major problem caused by the earthquake—which points up the importance of providing uninterruptible power supplies separate from commercial sources.

Earthquakes, of course, are one of the more rare occurrences that can interrupt data processing. Others include power failures (certainly more common), vandalism and fires.

In a survey of representative railroads, Railway Age asked three questions: (1) How do you protect your data-processing centers against physical damage to equipment and data? (2) How do you protect processed data against unauthorized use or theft? (3) Do you have a secondary data base in the event of damage to data and/or processing facilities?

● **What the railroads said.** Louisville & Nashville reports that its computer center is in a remote location on the seventh floor of the general office building, so that no through traffic can occur—hence there is limited access to the facility. Smoking is not allowed. Ionization fire-detection equipment is installed in the computer center with carbon dioxide hand fire extinguishers strategically placed about the center.

Seaboard Coast Line and Union Pacific have security forces on duty 24 hours daily, the year around. H. S. Thomasson, manager-data processing, Norfolk & Western, reports that "computer room doors are locked at all times. Only authorized personnel are issued keys. Shift managers on duty are charged with the responsibility of maintaining security."

The general practice among railroads is that only authorized personnel are allowed to enter data-processing centers. Southern follows this policy and also requires key cards for entry into the data-processing building from 6 p.m. to 6. a.m. on week days and all day Saturdays, Sundays and holidays. Watchmen are on duty from 4 p.m. to 8 a.m. seven days a week. Southern's magnetic tape vault is protected by an automatic carbon dioxide fire-extinguishing system actuated by smoke/heat sensing devices. Pyro-alarm smoke/heat sensor alarm systems are located in both computer complexes at the railroad's Atlanta headquarters. A Halon 1301 fire extinguishing system for the main data-processing center has been installed, reports John L. Jones, vice-president, management information services department.

Railway Age survey indicates that the industry is taking a variety of measures to safeguard its basic data

Southern Pacific adds the precaution of providing all employees of its data-processing center with identification cards containing each employee's picture, social security number and signature.

● **Controlled access.** All respondents to the survey control access to the magnetic tape files and library in their computer centers by permitting entry only to authorized personnel. Also, tape libraries are often fireproof vaults. SCL goes a step further and makes all materials contained within the data-processing system subject to a surprise audit at any time. L&N has a minimum of two operators on duty at all times, and all magnetic tapes and discs are stored inside the computer center. Also, data-file security is achieved through programming and hardware control.

Southern maintains around-the-clock supervision for all sections within its data-processing centers. The magnetic tape vault is protected by a full-time librarian. Stringent control over data is maintained by a data-flow system. This is accomplished, says Jones, by:

—Controlling only data which is of critical status and/or unrecoverable; mechanically assigning and recording a unique control number to data before they are produced; filing data by the control number, selecting data for input by control numbers; centralizing the selection of input data and placing the primary responsibility in one area; instituting control checks at four different points; placing the responsibility for releasing critical status data in one area and controlling that area with around-the-clock supervision.

● **Secondary data bases.** Four roads responded to the survey with specifics concerning data bases. Louisville & Nashville says program tapes and critical master tapes are stored in a fireproof data safe at an off-site location. The stored tapes are updated every three to six months, as needs dictate. A card-to-tape utility program is used to store every operational program. Disc files are dumped to magnetic tape for storage.

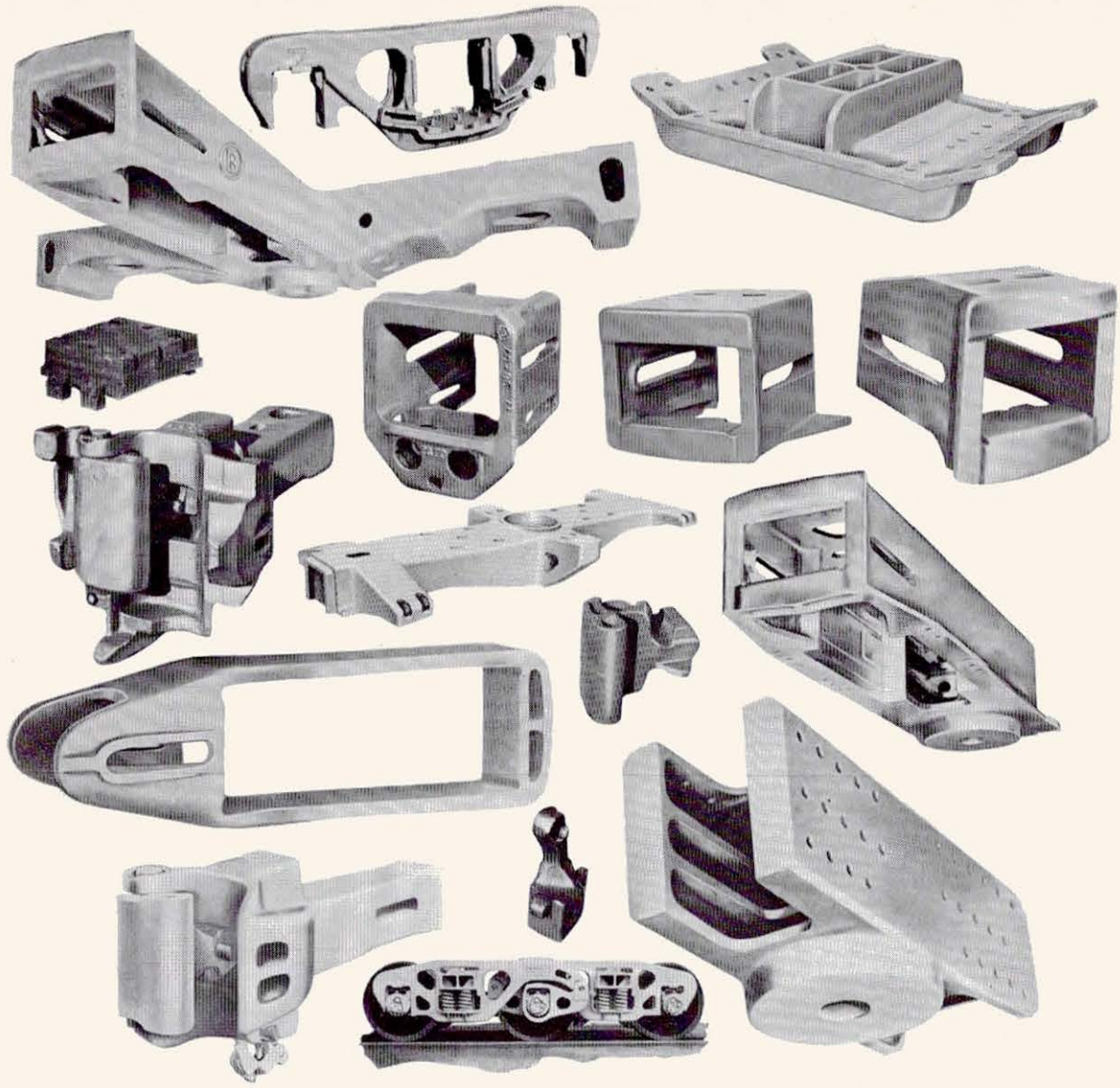
SCL has a secondary data base in all areas, and the more important ones have a duplicate in another city, at which absolute security is maintained. These include computer programs and important master files. This back-up source is updated every time it is used.

Southern's Jones says: "We have a magnetic tape library several hundred miles from our data processing centers. This library contains duplicates or prior generation of our critical and/or unrecoverable files and is updated as required—weekly, monthly, annually or when produced."

SP has a backup data store in off-site, atomic-proof vaults in two different locations. Data are transferred to those sites weekly, monthly or at lesser intervals, depending on the nature of the data. Also, SP microfilms and stores data in other off-site locations.

UP has a secondary data base of magnetic tapes in fireproof safes. One is in the computer center for active files. The other is in a completely protected vault at a location completely removed from the computer center. UP, like other roads, has no back-up data-processing facilities.

Because of the variety and availability of computer service bureaus, railroads do not see the need for standby computer hardware. In the event their data-processing equipment is damaged, they could use their secondary data base files and work on service-bureau computers. ■



If variety is the spice of life it's no wonder we're so well seasoned

No one . . . but *no* one makes as great a variety of freight car castings as Buckeye. More than forty. With innumerable variations. That's *variety.* And we've been doing it for almost 100 years. So we are well *seasoned.*

This variety and seasoning have helped make Buckeye the largest steel foundry in one location in the country, which is another advantage for our customers. And this puts us in a better position to meet the changing needs of today's railroads . . . with more new and proven products . . . when you need them. Isn't this the kind of well seasoned supplier you want to deal with?

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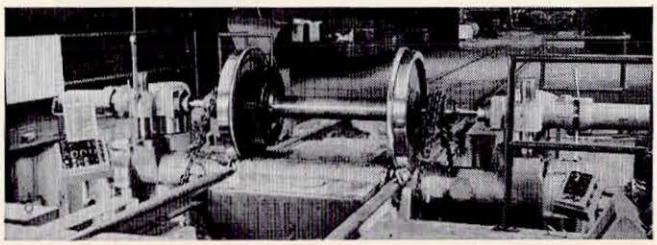
MEMBER RPI

Circle 18 on card opp. page 60

Continue to shape 'em up



How many times can you re-shape your rolling stock's wheels? Two or three times before they're shipped to the scrap pile?

Standard's Wheel Truing Machine can give you about 40% longer operating life from each wheel. Since it's a milling machine, it doesn't have to cut as deep as a lathe to true a wheel. So, each wheel can be re-shaped four or five times. That has to save you big bucks in the cost of re-purchasing and inventory.

instead of shipping 'em out

Saves you big dough in down time and labor, too. Because wheels can be trued quickly right on the car, as well as in single units.

How much of your rolling stock can a Standard Wheel Truing Machine handle? All of it . . . locomotives, box cars, flat cars, gondolas, mining cars, commuter cars and rapid transit cars. If it rolls on rails, Standard can help you keep it rolling for less.

STANDARD RAILWAY EQUIPMENT
division of STANRAY CORPORATION
Hammond, Indiana • Chicago, Illinois
IN CANADA: Davanac Industries, Montreal, Quebec

Circle 34 on card opp. page 60

FASTER, LOWER COST handling of trailers at smaller terminals was goal in design.

Rio Grande getting the first Swinglift

A lower cost side loading device for containers and trailers is going into service on the Denver & Rio Grande Western. The unit, called Swinglift, has been designed by the Trailer Division of Clark Equipment Co. for low-volume piggyback terminals where it would be difficult to justify gantry cranes or other expensive handling units. Rio Grande put Clark's first Swinglift at its Denver, Colo., terminal where it needed a unit capable of handling the growing number of containers that move through there.

Many small terminals continue to use "circus" loading and unloading, a system which often makes it impossible to handle "hot" trailers on a preferential basis. Such facilities encounter major problems if a container without wheels must be transferred.

● **Small terminals.** A Clark study made last year showed that of 1,550 unloading "ramps" or yards used by U.S. railroads, only one in 13 was mechanized. Clark says the primary marketing target for Swinglift will be the low- and medium-volume piggyback facilities where trailers must now go on and off cars on a "first come, first served" basis.

Swinglift will handle trailers or containers weighing up to 70,000 lb.; its reach allows it to stack containers two high. It can also transfer other rigid loads such as reinforced beams and steel sections. Another possibility is housing modules. The heavy loads are moved by a hydraulic boom system which is based on a European development that Clark is licensed to produce in North and South America.

SIDELOADING permits priority movement of "hot" trailer from car (above) to the ground (below) for over-the-road delivery.

Use of Swinglift is simple. First, a truck trailer pulls it into position next to the flat car which is to be loaded or unloaded. Since it is stationary when in use, and can load or unload from either side, it needs no maneuvering room. From a track center line, it needs a width of only 22 ft to the outside wheel of an unloaded trailer.

● **Highly maneuverable.** Unlike gantry cranes, Swinglift does not have to travel the length of a cut of cars before moving to another track. It can work in yards where terrain is relatively rough.

When not in use, the lift frame and hydraulic booms fold into a travel position, allowing Swinglift to be moved over the road from ramp to ramp, or terminal to terminal. Travel height is 13½ ft, width is 8 ft and the overall length of the loader is 60 ft.

Once in place next to a piggyback car, it has outriggers which extend to stabilize it. The operator has a control console attached to Swinglift by a 50-ft umbilical cord so he can move to observe the contact of the lifting arms on trailer side rails and the engagement of the king pin in the trailer hitch. All such actions are produced hydraulically; this system is powered from a 150-hp gasoline or diesel engine mounted at one end of Swinglift.

Once outriggers have been extended, the operator actuates the hydraulic booms which carry the lift frame into position over the trailer. Lift arms, which were tucked up next to the frame, are swung down on each side. Distance between the pairs of lifting arms can be remotely adjusted from 14 to almost 40 ft, allowing for various load sizes.

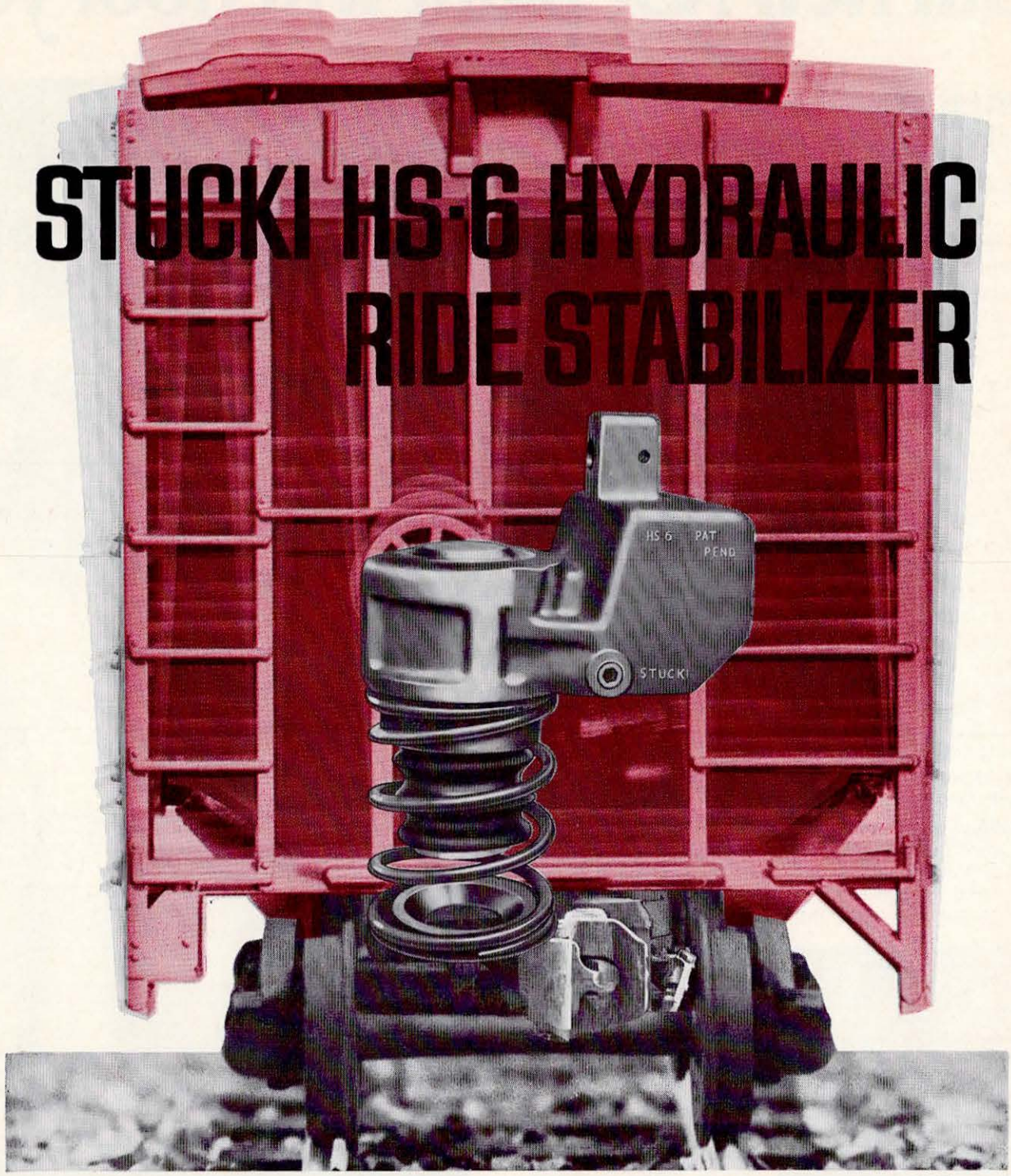
When the arms have securely grabbed the trailer, Swinglift picks it up, swings it over the transfer device's own frame, and deposits it on the car or ground on the other side, depending on whether it is loading or unloading. The whole cycle takes six to eight minutes.

● **Two designs.** Two types of lift frames will be available. The basic model with lifting arms is designed for the typical railroad which handles primarily piggyback trailers, but occasionally carries containers. To lift a container, heavy-duty cables are disengaged from the lifting arms which are then hydraulically swung up and out of the way. After the frame is positioned over the container, the cables are attached to its bottom corner castings for lifting.

The second lift frame, designed to handle only containers, lifts them by the upper corner fittings. It is adjustable for most sizes of ISO containers—including those 20, 24, 30, 35 and 40 ft long. Quick-connect hydraulic hose couplings permit fast switching from one frame to the other. ■

Lick both problems at once!

STUCKI HS-6 HYDRAULIC RIDE STABILIZER



High speed vertical reactions cause severe damage to structural members of freight car bodies and trucks. Lateral instability at low resonant speeds, often resulting in wheel lift, is equally destructive.

The Stucki HS-6 Hydraulic Ride Stabilizer minimizes both problems inherent in conventional freight car suspension. It is the most thoroughly researched device for the purpose now available. It is effective on *all* freight cars—70 and 100 ton—and it is easily installed on both existing and new cars. In addition, the HS-6 provides a softer ride for empty as well as loaded cars.

Rail damage and roadbed deterioration can be reduced by applying the Stucki HS-6 Hydraulic Ride Stabilizer on high capacity equipment, particularly that used in unit train operation. Write for further information.

A. STUCKI COMPANY

OLIVER BUILDING, PITTSBURGH, PENNSYLVANIA 15222 ☐ 412-281-1570

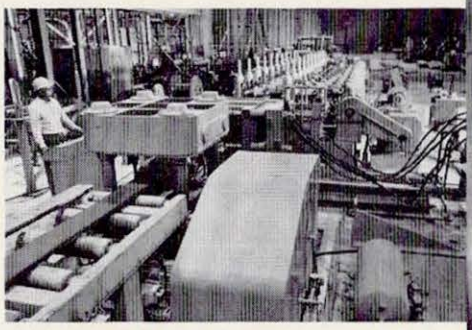
Circle 19 on card opp. page 60

Our new NSF® plant will floor you.

There is none other like it. It can make Nailable Steel Flooring faster and to greater precision than ever before.

Our new plant at Portage, Indiana, was engineered and newly built to be the industry's most modern manufacturing facility for Nailable Steel Flooring. This means we can deliver top-quality flooring, made to your specifications, in the quantities you need, when and where you need it.

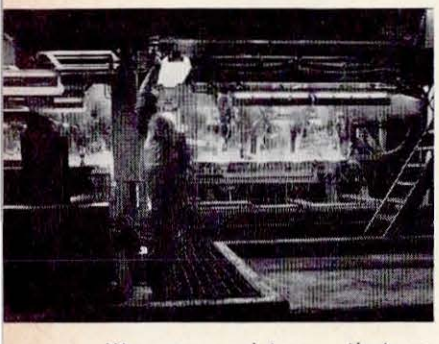
Technically speaking, our new plant is a fully integrated, semi-automated forming and welding mill. When you boil all that down, it simply means we can produce a superior Nailable Steel Flooring.



The production process starts with a custom-designed, eleven-stand forming mill (photo far right) that shapes the main flooring channel from a continuous coil of high-strength steel. Beside this mill is a similarly designed, seven-stand Yoder mill that forms the reinforcement channel.

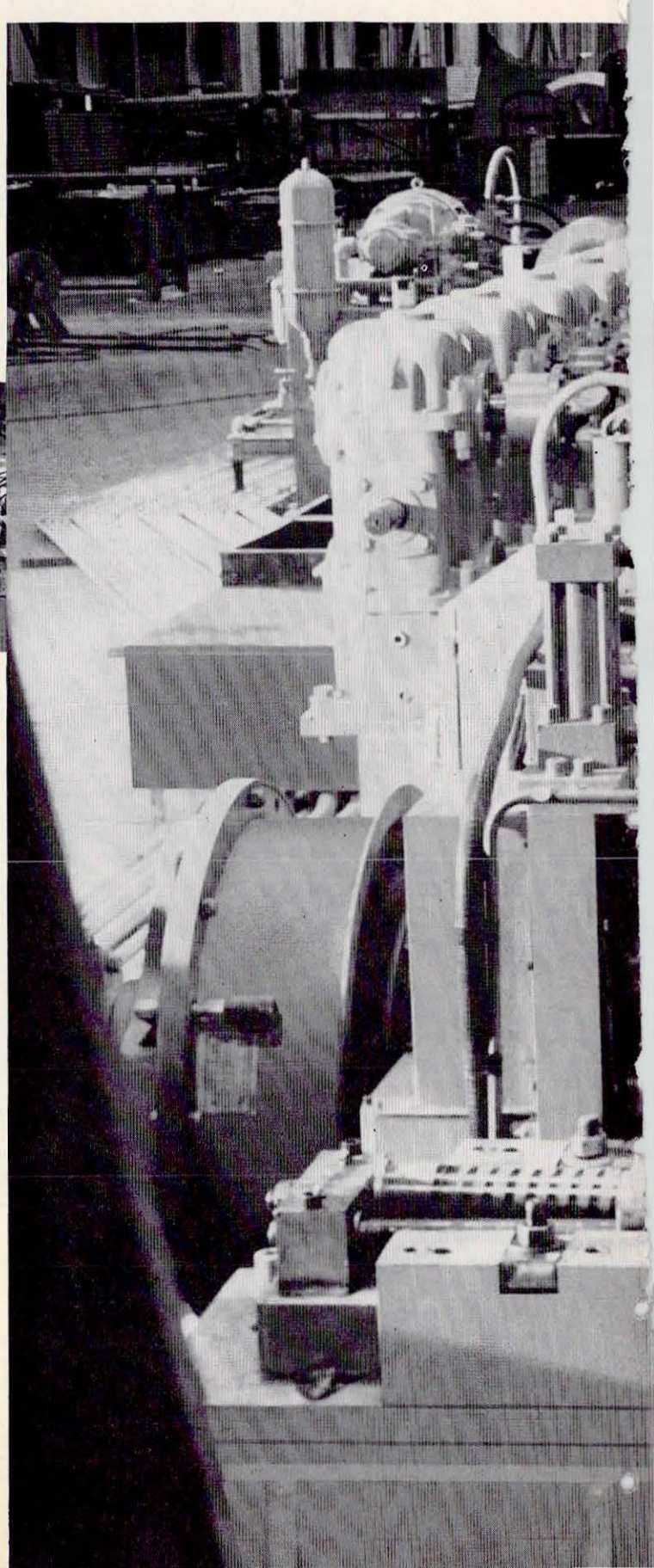
After forming, the channels are automatically cut to length (photo above) and conveyed to the automated welder (photo below). There the channel and reinforcement are brought together, positioned precisely, and automatically arc welded. The result is a rigid, strong, precisely dimensioned product.

And through every step, our Quality Control team continually measures, inspects and sometimes rejects the products in process. We make sure you receive exactly what you ordered . . . the best product possible.



We made a substantial investment in this unique facility to serve your needs better; to provide you with the most reliable source of quality Nailable Steel Flooring. We are proud to say that, now, what you buy from us is made by us. ***And we'll stand on that, any time.***

If you'd like to know more about our new custom facility or the five types of Nailable Steel Flooring we make, write us at 310 South Michigan Avenue, Chicago, Illinois 60604. Or call collect: 312—427-5230.



Transportation Products
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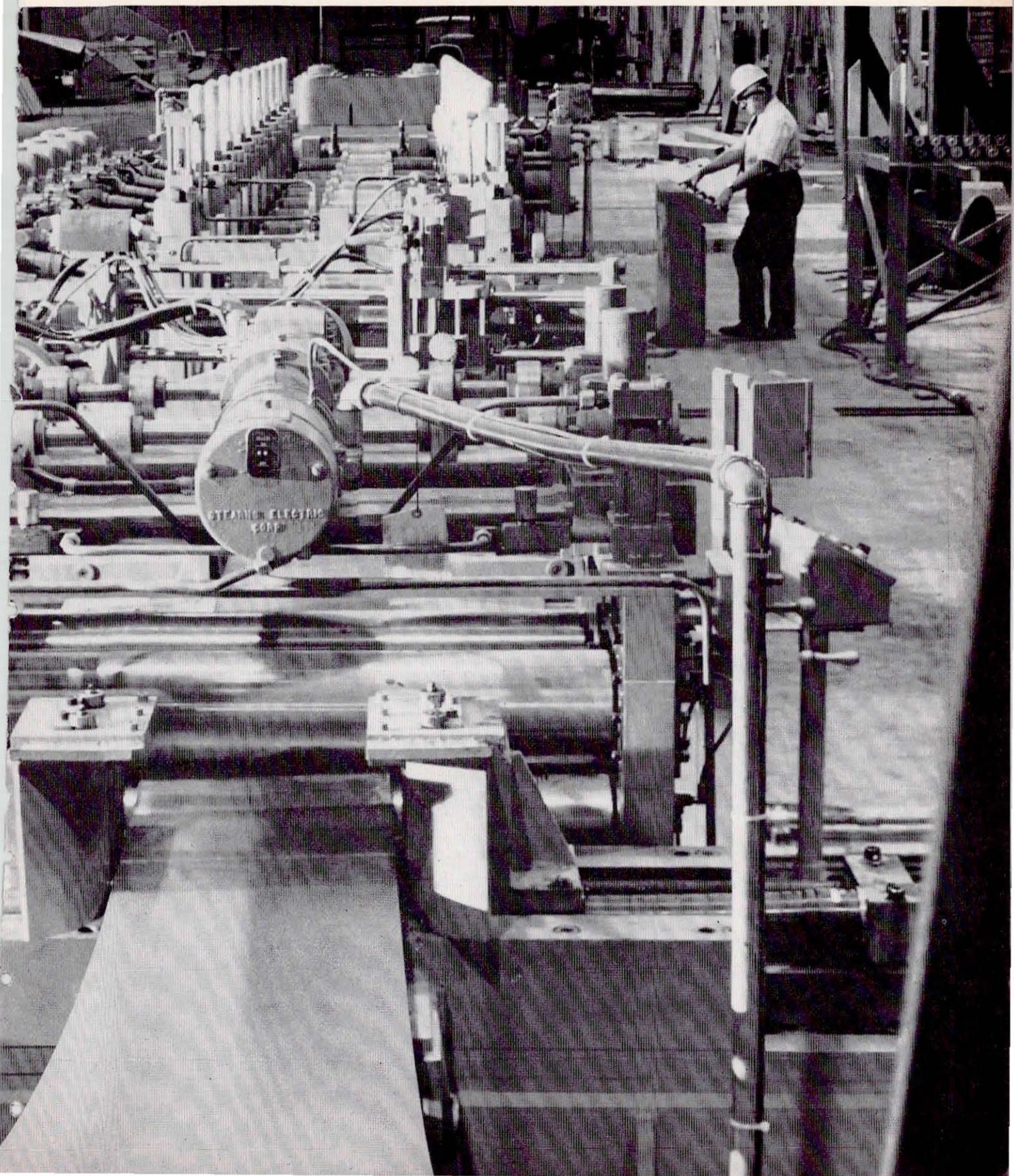
National Steel Corporation



MOVING PEOPLE

MBTA opens Quincy line

Revenue service on the South Shore Rapid Transit Extension of the Massachusetts Bay Transportation Authority was inaugurated on Sept. 2. The $76-million project involved rebuilding a former New Haven Railroad route six miles southeast from MBTA's Harvard Square-Ashmount line to a new terminal at Quincy. Pullman-Standard built the 76 high-speed transit cars which operate over the welded-rail/concrete-tie right-of-way.

Consultant says aerospace carbuilder delays BART

Opening of the Bay Area Rapid Transit may be set back into the spring of 1972 because, according to an engineering consultant's report, Rohr Corp. "apparently underestimated" how difficult it would be to build its first rapid-transit cars. The aerospace firm's $67-million order for 250 transit cars involves building ten prototypes, followed by 240 "production" cars, all of which were to be delivered by mid-1972. Difficulty in completing the prototypes (the tenth was finally delivered to BART in late August) and then completing their testing (which Rohr now expects to extend into the fourth quarter) is delaying production. BART's consultant took to task the Rohr "corporate and systems group management" which "apparently underestimated the complexity of the task both in regard to their own in-house efforts and that required by sub-suppliers." Cited specifically was subcontractor Westinghouse Electric.

Decision due on German-built trolleys

The purchase of a pair of articulated surface-subway trolley cars, built in Germany, has been authorized by the Massachusetts Bay Transportation Authority. But President Nixon's economic freeze order affecting foreign imports leaves UMTA's participation "under review," according to Transportation Secretary John A. Volpe. Carlos Villareal, UMTA head, expects a decision on spending $1.2 million for the Duwag car trials by early October. MBTA is seeking replacements for its aging PCC car fleet and is interested in street cars of the type used in Hanover and Frankfurt, West Germany, since "light rail technological development in the U.S. has been at a standstill for the past 20 years." San Francisco is seeking new bids for 78 similar American-designed two-unit, six-axle trolleys.

Washington Metro gets fare collection proposals; car bids delayed

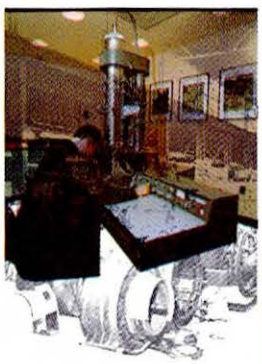
Four firms have submitted technical proposals to the Washington Metropolitan Area Transit Authority for automatic fare collection systems—Control Data Corp., Washington; IBM Corp., Gaithersburg, Md.; Litton Industries, S. Plainfield, N.J.; and Generale d'Automatisme, Paris. After a month of evaluation by WMATA, firms whose proposals are deemed acceptable will enter competitive negotiations for the engineering development phase. The contract will be worth about $10 million. Meanwhile, WMATA has announced it will delay the opening of priced bids for 300 cars from Nov. 1 until Feb. 1, 1972. This is because six firms submitted unpriced technical proposals on the cars, and WMATA needs more time to evaluate them. The delay will have the effect of permitting the bidders to structure their prices in conformity with the President's new economic policy, which involves among other things a 10% surcharge on imported equipment. Unpriced proposals were submitted by five domestic companies—Pullman-Standard, St. Louis Car, General Electric, Rohr, Ling Temco Vought, and Japan's Toshiba.

LUBRICATION ENGINEERING

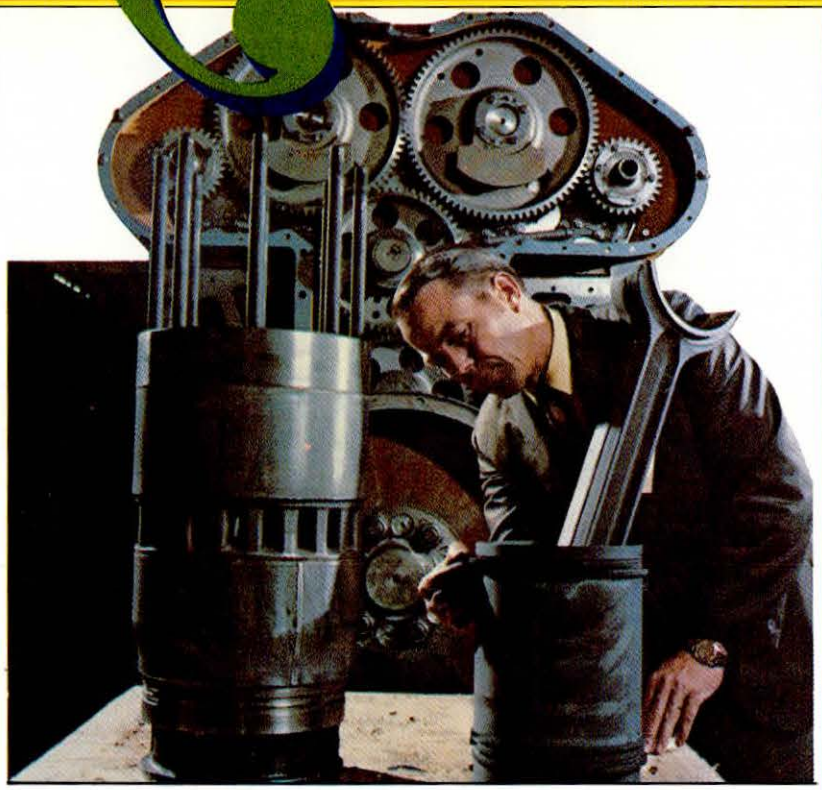
NEWS

Cities Service research and development program constantly producing new, improved diesel engine lubes

Cities Service Oil Company maintains an aggressive and continuing research and development program at the Cities Service Research Center complex near Princeton, New Jersey. Improved products for railroad applications, both on track and off, are under constant development and testing. Within the past two years alone, superior lubricants have been introduced for a number of different applications. In many cases, these advanced railroad lubes



have taken the place of two or more previous products and thus served to shorten the list of "required" lubricants in customers' inventories. For information on specific products now under development and available for test application programs, drop a line to L. M. Fleming, Transportation, Sales Department, Cities Service Oil Company, Box 300, Tulsa, Oklahoma 74102.



CITGO RD-836 Diesel Engine Oil Approved for General Electric "Superior Class II" Rating List

The promise of pulling more tonnage with fewer units and a resultant decrease in maintenance costs has remained little more than a promise in many cases. Higher horsepower diesel engines place greater demands on the crankcase oil and on those moving parts whose life depends on effective lubrication. Conventional high dispersant diesel lube oils just couldn't handle the load. Something better had to be developed.

That something better turned out to be CITGO RD-836, specifically formulated to get the maximum usage from each new high horsepower engine. RD-836 withstands more heat for longer periods; neutralizes greater amounts of acid; keeps oil filters and engine surfaces cleaner. Wear is reduced and oil life is significantly extended, resulting in less downtime and lower maintenance costs. Thirteen major railroads are now using CITGO RD-836. In case after case, examination of pistons, rings and cylinders following thousands of hours of operation shows virtually no wear.

Oustanding reserve alkalinity and stability

Among the properties which enhance the performance capabilities of CITGO RD-836 diesel engine oil include excellent reserve alkalinity for extended TBN retention, very fine compatibility with other approved diesel engine oils and unusual stability. **Field tests have indicated this outstanding stability results in a drastic reduction of clutch slippage.**

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In addition to these qualities, RD-836 also possesses exceptional anti-rust and anti-foam properties provided by special components in the additive package. The superior grade medium VI base stocks contribute exceptional oxidation stability and anti-wear protection along with good silver lubricity.

Dispersant, detergent keep engine parts clean, filters free-flowing.

An ashless dispersant and a detergent additive are key ingredients in CITGO RD-836 diesel engine oil. Designed to provide both longer service intervals and extended filter life, its high despersancy permits the oil to flow readily through filter elements with a minimum of filter and oil

cooler plugging. This is particularly important in the lubrication of engines equipped with by-pass valves, where particles in the unfiltered oil could otherwise settle out and cause abrasive damage to bearings. **All these superior characteristics have helped CITGO RD-836 become one of the few lubricants to win a place on General Electric's "Superior Class II" rating list.**

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The Bureau already has formal arrangements with about a third of the Class I railroads, and, with many industrial and other short-line roads. The completion of four-year courses qualifies apprentices as journeymen. Some roads use accelerated programs, turning out skilled machinists, electricians, carmen, car inspectors and other craftsmen in as little as three years. In the case of especially responsive students, two years is sufficient for the regular four-year course. Many other railroads use shorter REB courses for upgrading and refreshing. The Bureau also offers four two-year courses, as follows: Locomotive Engineers, covering diesel-electric Equipment and air brakes; Locomotive Electrical Equipment; Locomotive Mechanical Equipment; and Car inspectors and Carmen.

Railroads and trainees get feedback

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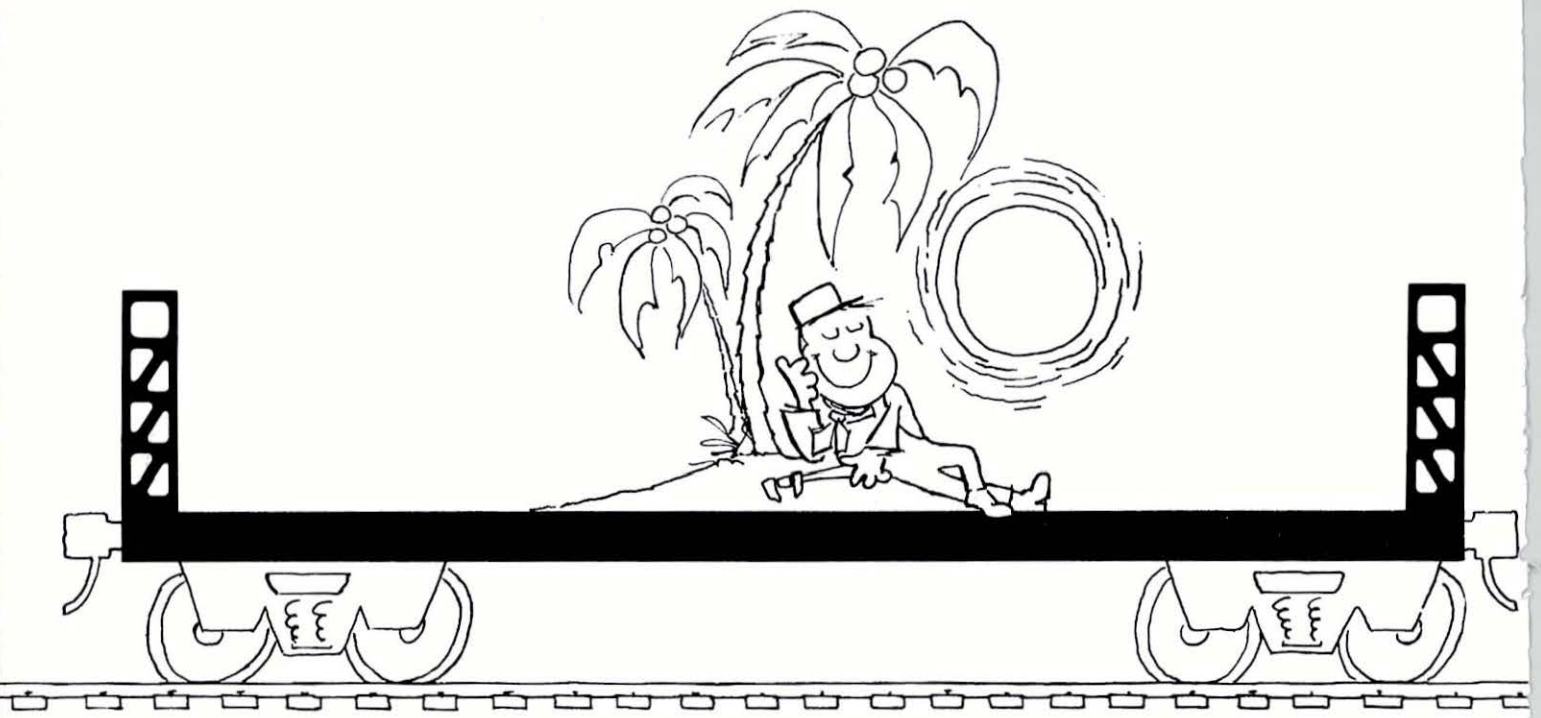

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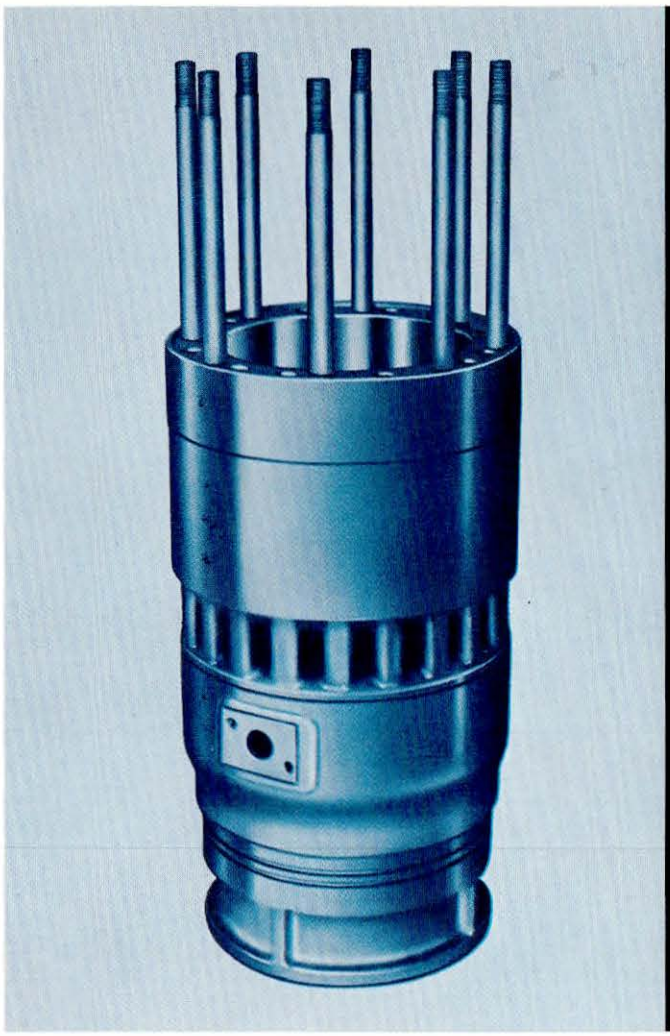

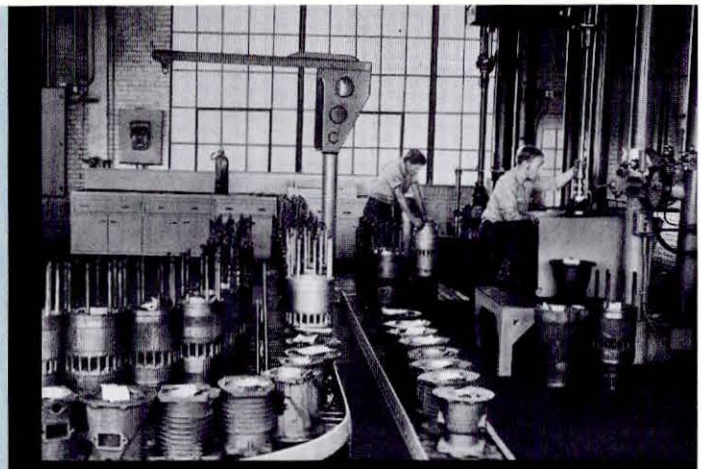

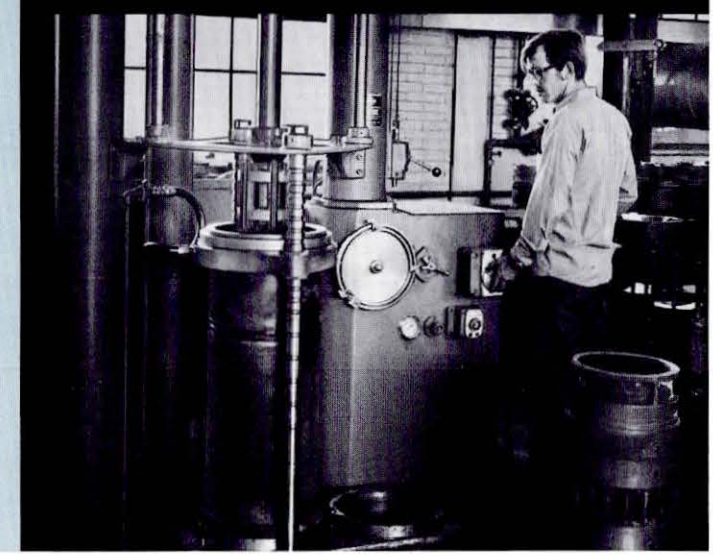

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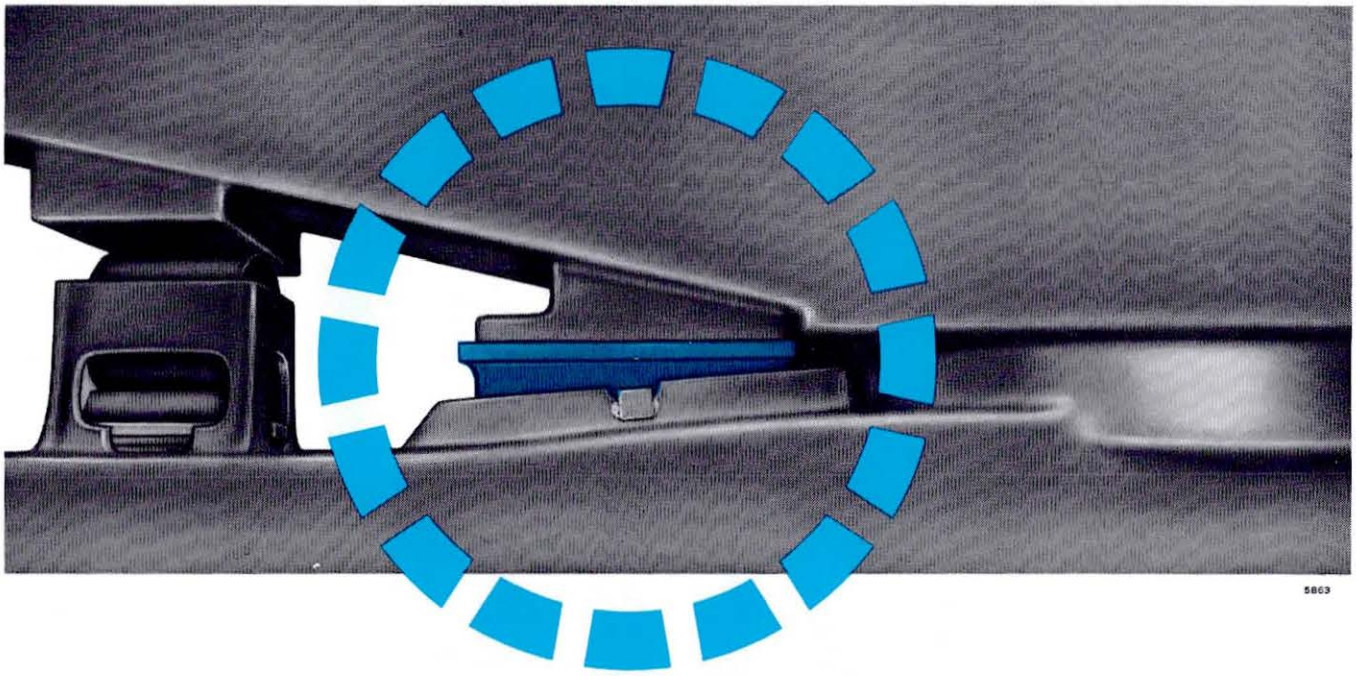

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And it has already converted over 6,000 daily motorists to a clean, comfortable, traffic-free ride in attractive stainless steel cars.

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And PATCO will save money on paint because stainless steel cars fight off corrosion without paint.

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For more information on nickel stainless steel for railway and transit cars, write to Dept. RA-971, The International Nickel Company, One New York Plaza, New York, N.Y. 10004. In Canada, The International Nickel Company of Canada, Limited, P.O. Box 44, Toronto-Dominion Centre, Toronto 111, Ontario.

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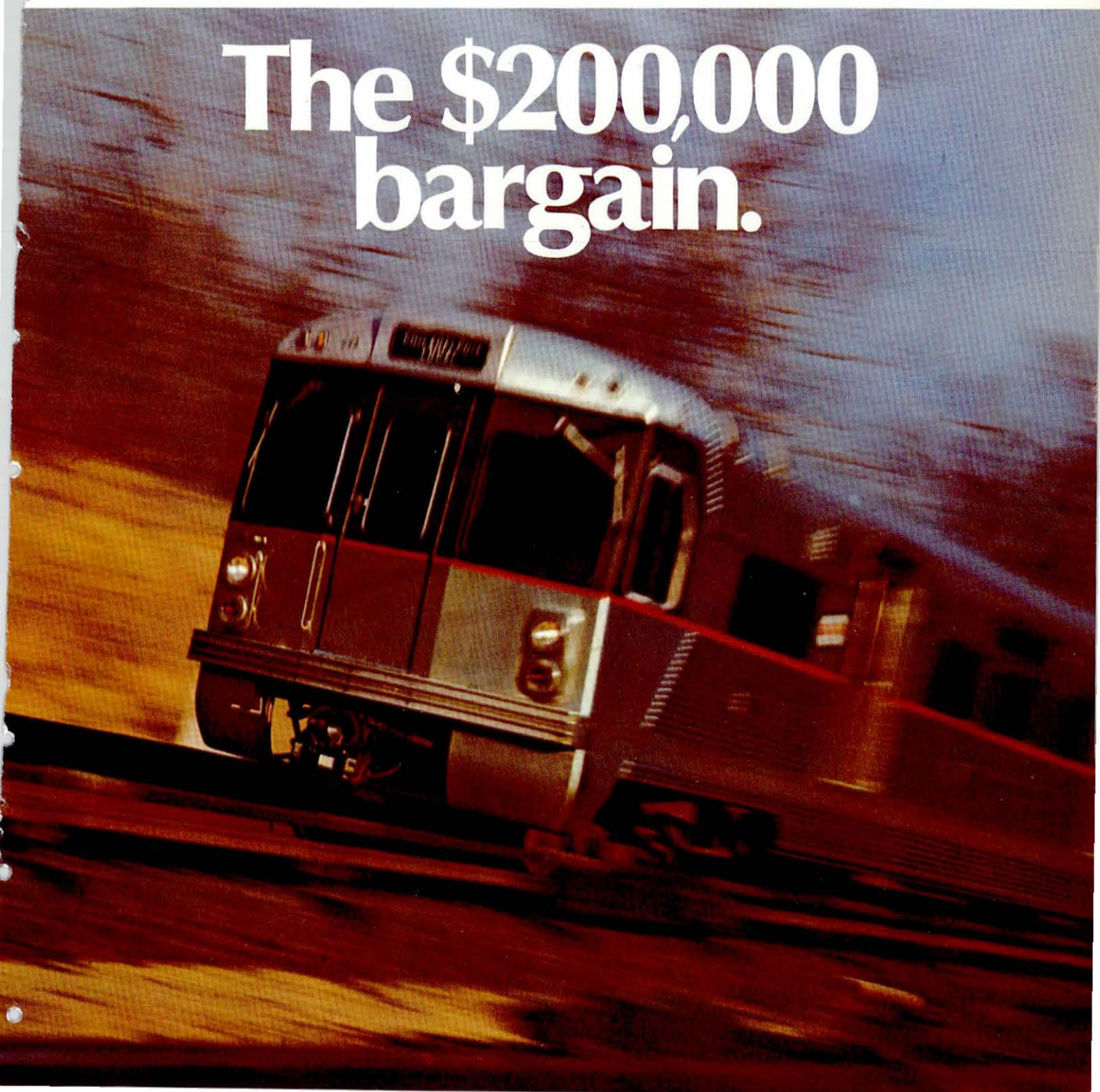
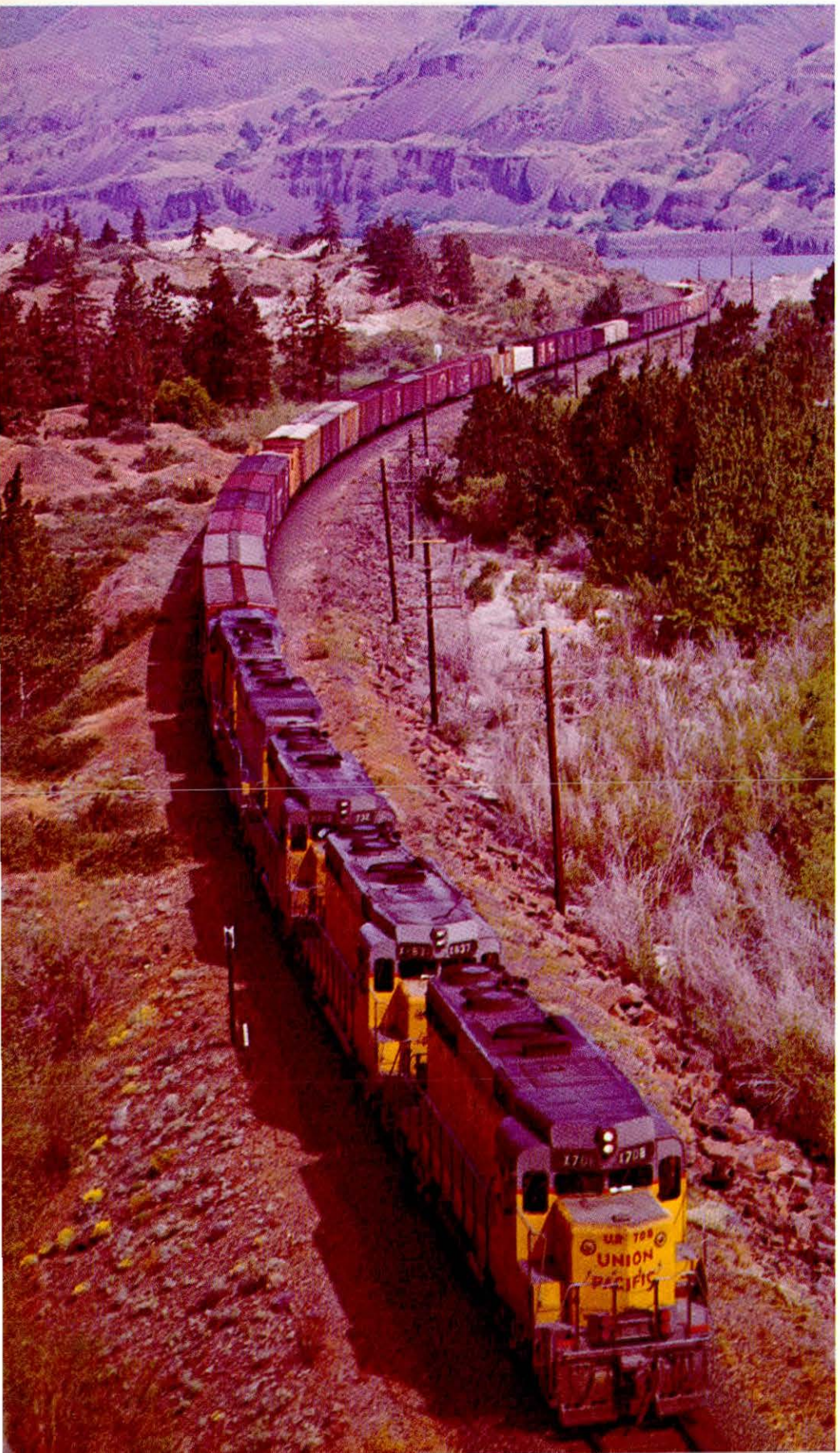


Squeezing fresh oranges through the mountains takes a rugged diesel lube oil.



When it comes to shipping produce, there's not much time before a ripe orange turns into a rotten one.

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Pay-as-you-go transit?

Atlanta prepares to vote on a transit tax; St. Louis is watching

ATLANTA: One-cent sales tax is proposed.

ST. LOUIS: Bond issue not enough?

Few cities have looked longer and harder at rail rapid transit—and encountered more obstacles in translating the dream into reality—than St. Louis, Mo., and Atlanta, Ga. Now Atlanta is ready to go to the voters with a bold, pay-as-you-go transit financing plan, involving a one-cent transit sales tax. And St. Louis has been advised by its consultants to keep an eye on the Atlanta experiment.

● **Big savings in interest.** Voters in Atlanta's four metropolitan-area counties—Fulton, DeKalb, Clayton and Gwinnett—will be asked on Nov. 9 to approve imposition of a sales tax to finance construction of 56 miles of rail transit lines and 14 miles of express busways.

Roy A. Blount, chairman of the Metropolitan Atlanta Rapid Transit Authority, says the pay-as-you-go plan would save taxpayers $150 million in long-term interest.

It's contemplated that the Federal government would pay two-thirds of the $1.4-billion capital cost of the proposed system, under terms of the Urban Mass Transportation Assistance Act of 1970. The remaining one-third would come from the sales tax, which would generate in excess of $1 billion over a 15-year period. A little more than half of this would go for the local share of construction costs and for interest payments. The remainder would go toward operating costs of the combined bus and rail system. A major feature of the plan, calculated to win voter support, would be reducing Atlanta's present 40-cent basic transit fare to 15 cents as soon as MARTA acquires the bus company, probably in mid-1972.

Atlanta's plan provides for 40 rapid rail stations and four rapid busway stations. Thirty of the rail stations and three of the busway stations would have parking facilities for a total of 34,500 cars.

The principal rail system would run generally from Central Atlanta (Five Points Station) north and northeast to Norcross in Gwinnett county; south to Forest Park in Clayton County and to College Park in Fulton County; east to the Perimeter Road (I-285) in DeKalb County; and west to the vicinity of the Perimeter Road in Fulton County. Branch lines would extend from the West Line to the Perry Homes area in northwest Atlanta and from the Central Line to Northside Drive near the Northwest Expressway (I-75).

The rapid busways would be tied into the rail system and operate in exclusive traffic lanes.

In the Nov. 9 referendum, a favorable vote will be needed in Fulton and DeKalb for the program to go forward. Clayton and Gwinnett may or may not participate as their voters dictate.

Given a favorable vote, MARTA will begin detailed design of the rail system by mid-1972. Within another year, rights of way will be acquired and construction started. First trains would be operating three years after that.

● **New hope in St. Louis.** An equally ambitious plan has now been completed for St. Louis, calling for an 86-mile, $1.5-billion rail transit system. Financing has proved to be the big obstacle, but recent developments have given transit planners new hope.

Late in August Missouri Gov. Warren E. Hearnes decided to back a $700-million transportation bond issue that would include $150 million for mass transit. This represented a reversal of an earlier stand which seemed to favor an exclusively highway bond issue. Sources in Jefferson City say the bond-issue could go to a state-wide referendum as early as August 1972.

Proposed for St. Louis is a long-range program calling for construction of seven rapid transit lines with 59 stations complemented by a bus network.

Two of the rail rapid lines would be in Illinois, radiating from the St. Louis-East St. Louis core area—one in a northeasterly direction to Granite City and another in a southeasterly direction to Edgemen.

In Missouri, there would be three radial lines and two cross-town lines. Each radial line would emanate from the core area—(1) northwesterly along the Natural Bridge Corridor to Bridgeton; (2) westerly along the Olive Street-Lindell Corridor to Clayton; and (3) southwesterly along the Gravois Corridor to Crestwood.

The cross-town lines would serve the Inner-belt Corridor through Clayton from Hazelwood on the north to Afton on the south; and the Kings Highway Corridor from I-270 on the north to Gravois and Morganford Roads on the south.

Peter Vandersloot, head of a consortium of consultants that drew up the St. Louis plan, has urged local backers to examine closely the Atlanta financing plan.

Said Vandersloot: "It seems to me that this is a revolutionary approach St. Louis might want to consider." In addition to a sales tax, the consultants — Parsons-Brinckerhoff-Tudor-Bechtel-Sverdrup & Parcel—proposed that St. Louis also consider the imposition of special property, income, motor fuel and motor vehicle license taxes to pay for the transit system. St. Louis, like Atlanta, would rely on the Federal government for two-thirds of the construction capital. ■

Governor Shapp: The case for free transit

Pennsylvania Gov. Milton J. Shapp is known as a man who speaks his mind —and he has spoken out often and candidly on transportation in general (he is no Penn Central fan) and mass transit in particular. He wants better transit for Pennsylvanians—and he wants to see Pennsylvania companies get their share of the transit hardware market. Railway Age Associate Editor Fred Houser interviewed Governor Shapp in his Harrisburg office.

Q. Governor Shapp, what sort of priority would you assign to mass transportation in Pennsylvania.
A. Transportation is one of the most important subjects on my whole agenda because you cannot have economic growth unless you have modern transportation. We have a lot of tax problems in the Commonwealth. But I have been telling businessmen that even if we had no taxes in Pennsylvania, and if we didn't have modern transportation giving them efficient methods of bringing in the raw materials and hauling away the finished goods, they would not locate in Pennsylvania under any circumstances. So, transportation is very critical for the economic development of an area.

In Pennsylvania in the last 50 years or so, unfortunately, we have not kept up with the rest of the nation. Railroads have been deteriorating ever since World War I. The railroads, because of their political domination in the state, held back the highway program for many years, but now we are starting to get good highways throughout the state. Mass transit problems in our cities are still something we must come to grips with. In my budget for this year, I've allowed for $36 million dollars for aid to mass transit in the communities in the state and we will be stepping up this amount in future years.

Q. Pennsylvania has an unusual concentration of rail-transit know-how and productive capacity. Can this sort of thing be marshalled to help solve some of the state's problems?
A. I am hopeful that the 144 new cars for SEPTA will be manufactured domestically — and by Pennsylvania manufacturers. There are 70 new cars needed for New Jersey and I presume some others are being made. To me, it is an asinine policy of the U.S. government to use our own tax dollars to encourage foreign competitors to come in from Japan, Sweden and other countries to compete with our own domestic manufacturers. There is a tremendous need for rolling stock—trains of all kinds—in this country. We should be rebuilding our railroads. I am not just talking about mass transit —I am talking about all railroads. Every other nation in the world is doing it. We are just assuming that railroads are a thing of the past, when actually they are the transportation of the future.

Pennsylvania's manufacturers could profit greatly from this, and so could other American manufacturers. I have talked to Secretary Volpe about this and exchanged letters with him. I think it is unfair to our own manufacturers, who could use this business, for the U. S. government to be encouraging Japan and other foreign countries to come in and bid against them. We are the only nation in the world to use our tax dollars to encourage foreign competitors to compete against our own companies.

Q. You have indicated that free or reduced transit fares would benefit Pennsylvania. Have you instituted any formal studies of this?
A. There have been some studies made. We have been talking to several consultants and it's just a matter of getting my new budget through so we can sign a contract and go ahead on this. I am somewhat convinced in advance that a major reduction in fares and possibly going to free service would in the long run show a definite saving for society as a whole, because it would mean a lot of people wouldn't drive their cars. We wouldn't have to worry so much about the highway situation, the pollution problem that goes along with moving many people in our cities with private automobiles and so on. I think if we had nice clean transit cars, street cars, train service and buses at zero fare it would be a big boon to the inner city once again.

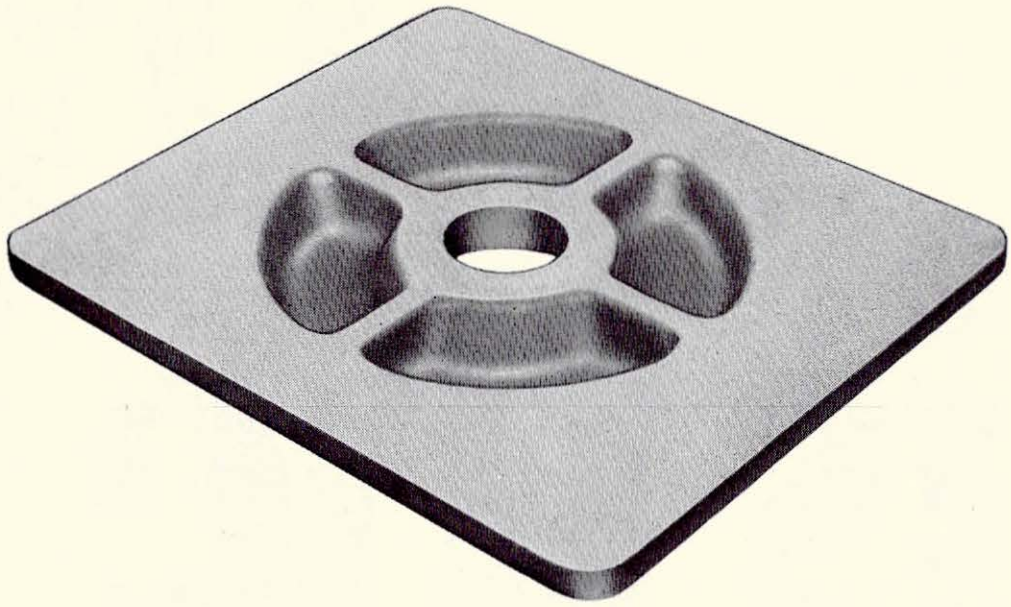
I know that there are some small places that have zero fares. Kent, Ohio, has a system of that sort. New Orleans until a few years ago had a ten cent bus and trolley fare and modern equipment; a great percentage of their people ride and their downtown area has maintained a very strong economic position.

Q. What is the status on aid for mass transit on the state level?
A. It has doubled in this year's budget over last year's.

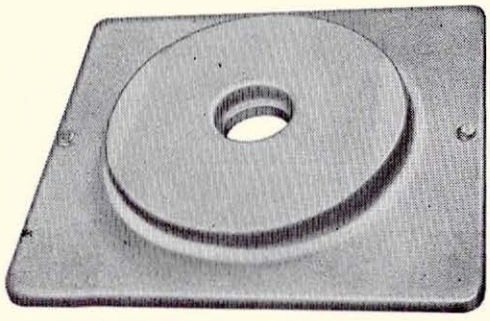
Q. New York, New Jersey and Maryland have been funding mass transit through transportation bond issues that have involved also highways. Miss-

(Continued on page 90)

AAR FOUR-RIB FREIGHT CAR BODY CENTER PLATES



Once again, Pittsburgh experience takes the lead.



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Circle 40 on card opp. page 60

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TAPERED ROLLER BEARINGS

Circle 41 on card opp. page 60

(Continued from page 86)

ouri not too long ago rejected this same concept. Is this a viable proposal to Pennsylvania?

A. We have a problem with it because our constitution states that you can use the funds that you raise from gasoline taxes only for highway construction and maintenance. Therefore, we can't use any of the gasoline tax funds or fuel taxes that we collect for any form of mass transit. We are trying to work out methods of subsidizing some of the mass transit and get around our constitution in this way.

Q. Frequently, people who don't live in the city seem reluctant to support city transportation. Can this perennial urban-rural controversy be resolved to bring aid to urban mass transit?

A. We are getting support in our legislature for the aid programs we now have. We have many cities throughout the state—not just Pittsburgh and Philadelphia. We have Erie, Scranton, Wilkes-Barre, Reading, Aliquippa and many other cities, that have major mass transit problems. For example, Aliquippa hasn't had any buses running in about eight months. In November of this year, all the buses in Lackawanna County, which is the Scranton area, are going to stop running. We have no major problem here since the legislature is not that politically divided against the cities. There are so many communities that need help.

Q. You have said something about regional transportation agencies, something more than the present Southeastern Pennsylvania Transportation Authority and the Port Authority of Allegheny County. What would these new groupings mean?

A. I think there is a major problem in providing more commuter service. I would like to see an over-all system in the state where we had high-speed rail service—passenger service as well as freight—connecting Erie and Pittsburgh, Pittsburgh to Harrisburg and then on to Philadelphia and from Philadelphia to the Poconos and then up to the Anthracite region. I feel if we did this we would be able to rebuild the economy of the Commonwealth to a much greater extent than we can without it.

Q. What about intercity rail passenger transportation?

A. It is virtually non-existent, with the exception of commuter service between Philadelphia and Harrisburg, Philadelphia up to Reading, Philadelphia to New York and Philadelphia down to Chester. In the rest of the state we have very poor passenger service. Of course, under Amtrak, it has been reduced even more drastically than the poor service that existed before Amtrak. I think a better name for Amtrak would have been "Derailed."

Q. What about the rail freight situation in Pennsylvania?

A. It is terrible. At the time I was fighting the Penn Central merger, I predicted that if the Pennsy and the New York Central were allowed to merge this would just be the beginning of the drying up of freight service in Pennsylvania. This has proven, unfortunately, to be correct. The Penn Central started long before they went into bankruptcy to cut back on freight service and even now under bankruptcy we have to go after them all the time to continue service on certain lines that they want to cut out. This has caused repercussions in our economy. Now we have the Central of New Jersey wanting to cut back on service. We have 66 companies served exclusively by the Central of New Jersey in eastern and northeastern Pennsylvania and they want to cut out that service. The Reading is cutting back. The Pittsburgh & Lake Erie used to interconnect at Connellsville with the Western Maryland and that is drying up. We are in very bad shape. You know, the less transportation you furnish, the less need there is for transportation. And so it becomes a downward spiral, affecting the economy very badly and we have got to continue to fight to make sure we maintain rail service in Pennsylvania. ■

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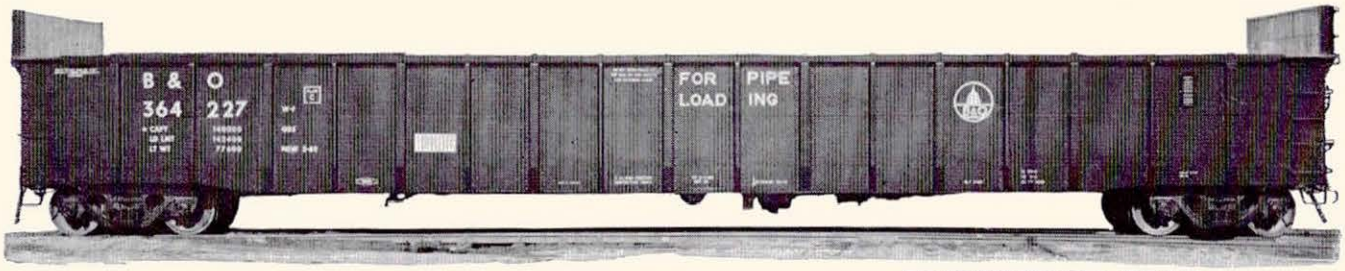

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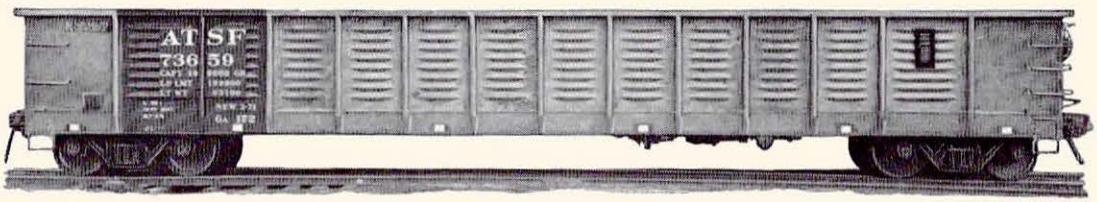

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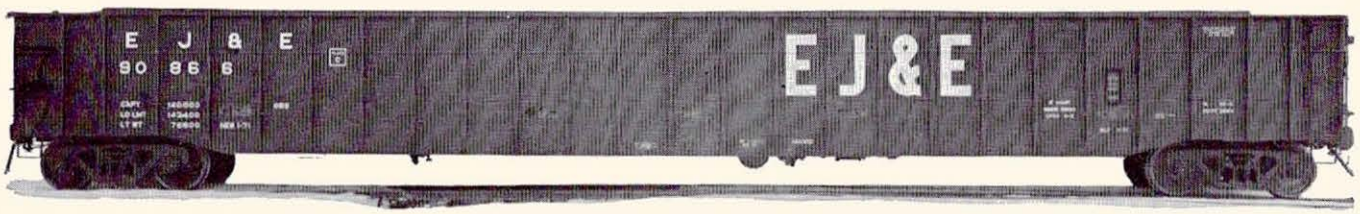

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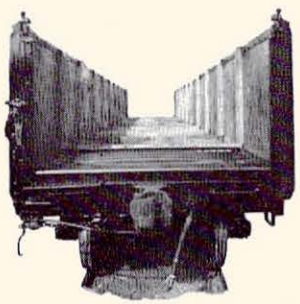

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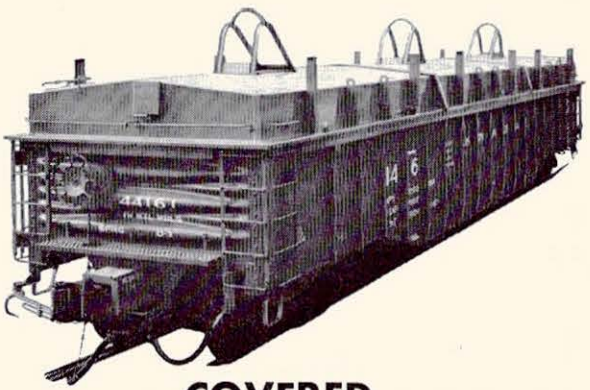

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NTSB seeks greater transit safety

The National Transportation Safety Board has recommended that safety conditions be placed on Federal grants to rail rapid transit systems. The Urban Mass Transportation Act of 1970, in adding safety to previous Federal objectives in the field, "appears to support reasonable activity" by UMTA "to provide for safety in projects for which it grants funds," the Board said. Currently authorized UMTA grant funding averages more than $600 million annually over five years, NTSB noted.

The funding-conditions proposal is one of 11 recommendations made by the Board in its report on a special study of existing and planned U.S. rail rapid transit systems and rail commuter services. Other recommendations, directed to both government and industry, seek system safety practices, specific safety improvements, improved emergency procedures and uniform accident reporting.

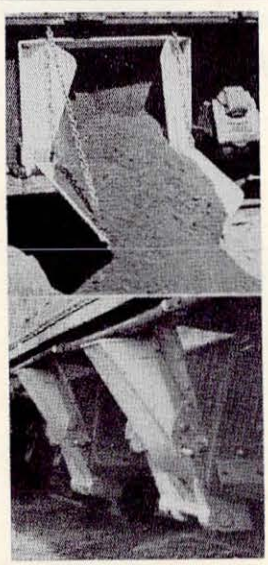
NTSB concluded that "the tools available to UMTA by which to encourage or even assure safety results" in the various UMTA-aided projects are ample. If grants are made "conditional upon safety by analysis, as well as other factors, individual applicants would not only study their own systems, but also learn for themselves the most recent state of the art" of rail transit safety. Existing UMTA grants for new system construction, upgrading of existing systems, demonstrations, and research and development carry no such safety conditions.

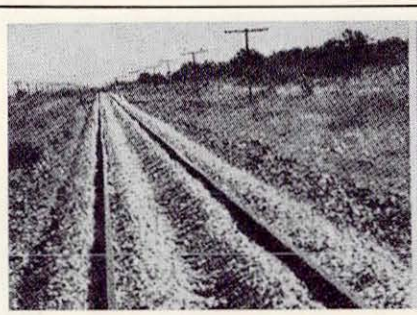
The Board's study, from a review of available 1968-1969 accidents statistics, disclosed a lack of uniformity among various systems' data which precluded detailed analysis. NTSB did find, however, that most passenger injuries occurred within stations, and most fatalities resulted when persons on tracks were struck by trains. The Board urged separation of passengers from track in stations, train-approach warning systems, and protection of track with fences and grade separation.

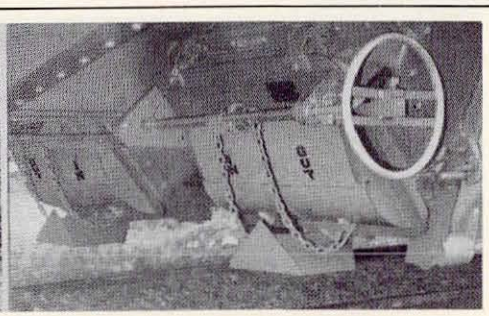
Commenting on the hazards of car-floor-height platforms, NTSB said: "In urban areas, there are very few other places where the public is allowed to congregate immediately adjacent to an unprotected opening which is four feet deep and carries the threat of death at the bottom."

Existing systems, ranging from new to 66 years old often "showed evidence of a low level of maintenance." They have "not retained the degree of inherent safety they possessed upon completion of construction," the Board said. "Passengers who once would suffer a rare inconvenince are now frustrated by recurring delays, and as a result have reduced confidence in the system. Incidents, originally of minor consequence, now are becoming emergencies with the potential for a serious outcome." NTSB concluded that "protection against vandalism and assault is now a necessary consideration in most rail rapid transit design and in maintenance work."

The Board recommended that UMTA acquire a safety engineering capability, require all capital applications to include a system safety plan, include "safety considerations" in studies of possible Federal aid for meeting rail transit operating costs, and study the feasibility of separating passengers from tracks in the stations of transit systems now being planned. The Federal Railroad Administration was advised to establish a uniform accident-reporting system for transit operators, similar to the system that is now used for the railroad industry.







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People

ALASKA.—Francis C. Weeks, assistant to the chief engineer, appointed assistant chief engineer, bridge and building, Anchorage, succeeding **Bruce E. Cannon,** who retired May 31.

AMTRAK.—Roger W. Brown has been named director of personnel, Washington, D.C. Mr. Brown was formerly corporate director of human relations, **STP Corp.,** Des Plaines, Ill.

Elmer E. Jones, Jr., and **Joe G. Matthews** appointed directors of congressional relations, Washington, D.C. Mr. Jones was formerly consultant, **Aerospace Industries Association.** Mr. Matthews was a senior consultant, **United States Department of Transportation.**

ARKANSAS & LOUISIANA MISSOURI.—Tom McKinley appointed general agent, Monroe, La., succeeding **John Smith,** who resigned to establish private warehousing and distribution center in Monroe.

ASSOCIATION OF AMERICAN RAILROADS.—John J. Robinson, assistant director, has been appointed executive director and secretary, Operating-Transportation Division, succeeding the late **Charles A. Lauby.**

BALTIMORE & OHIO.—Frederick S. Baldinger, regional sales manager, New York, named assistant vice president—merchandise freight sales, Baltimore.

John S. Keneski appointed district freight sales representative in Denver, succeeding **Frank J. Leskey,** retired after 47 years with the B&O.

BANGOR & AROOSTOOK.—Gary B. Pettentengill appointed assistant to the superintendent of transportation, Houlton, Me.

BELLEFONTE CENTRAL.—Harold R. Ammerman has been elected executive vice president, treasurer and general manager, Bellefonte, Pa., succeeding **George E. McClellan,** who retired July 31, after more than 34 years of service.

BESSEMER & LAKE ERIE.—James Glenn Leonardo appointed coal service representative. **Richard J. Bajkowski** named supervisor of pricing—general commodities.

BURLINGTON NORTHERN.—Joseph R. Galassi named director-corporate planning and **John L. Schroeder,** manager-managerial planning in the corporate planning division of the management services department. **David J. Stringfellow** appointed financial analyst in the financial planning division of the finance department. All will have headquarters in St. Paul.

Glenn W. Saylor, superintendent, Portland division, transferred to the Chicago division. **Taul Watanabe** named executive director, International trade, Seattle. He was formerly associated with the **Port of Seattle.**

CANADIAN NATIONAL.—W. Sergeant, project manager commuter services, Toron-

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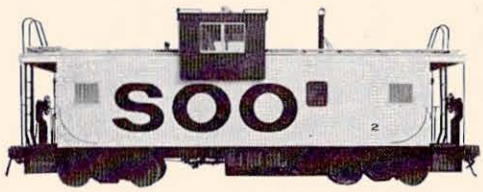

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MEMBER RPI

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to, appointed manager urban transit, Montreal.

J. A. Clark, superintendent transportation, Saskatchewan Area, appointed assistant general superintendent transportation, Prarie Region, Winnipeg, succeeding **S. J. Wise,** retired after a 43-year career.

J. E. Garrity appointed terminal superintendent, Moncton, N.B.

CANADIAN NATIONAL-AIR CANADA.—David W. Kettler named to the newly created position of manager, Southeast Asia. Mr. Kettler, who will establish an office in Hong Kong, will be responsible for developing sea-rail traffic for CN and sea-air and air traffic for Air Canada.

CANADIAN PACIFIC.—J. P. Kelsall, director of cost analysis, Montreal, appointed assistant chief of transportation, Montreal.

CHESAPEAKE & OHIO.—Wilmur C. Anspach, district manager–trailer service, Chicago, appointed district sales manager, Saginaw, Mich.

CHESAPEAKE & OHIO-BALTIMORE & OHIO.—Paul E. Tatro, auditor material accounts, named assistant auditor of expenditures, Baltimore. **Donald H. Stevens,** superintendent of costs, Chicago Terminal, appointed senior revenues analyst, Baltimore.

CHICAGO SOUTH SHORE & SOUTH BEND.—Elden E. Lidke, trainmaster, promoted to the newly created position of assistant superintendent-transportation. **Alexander Corbett,** assistant general agent, appointed general agent-transportation, succeeding **William G. Ruther,** who retired Aug. 1.

CLINCHFIELD.—Ralph Miller, assistant personnel officer, Ewin, Tenn., promoted to personnel officer, succeeding **L. R. Beals,** personnel officer–assistant to general manager, who retired July 31, after more than 48 years of railroad service.

DELAWARE & HUDSON.—C. E. R. Haight, chief engineer, Albany, N.Y., retired Sept. 1, after more than 41 years of service. Succeeding Mr. Haight is **R. F. Bush,** who is also chief engineer, **Erie Lackawanna.**

K. E. Miller, general manager–labor relations, Albany, retired Sept. 1, after a 45-year career. Mr. Miller is succeeded by **R. A. Carroll,** who is also general manager of labor relations, **Erie Lackawanna.** Mr. Carroll also will hold the same position on the **Greenwich & Johnsonville** and the **Napierville Junction.** He also will serve as equal employment opportunity officer for those lines.

DENVER & RIO GRANDE WESTERN.—P. P. Maguire, district manager, Boston, Mass., retired Aug. 16, after more than 31 years of service.

P. S. Nepper appointed district representative, Boston, with headquarters at New York.

ERIE LACKAWANNA.—Warren G. Barber, director of market research, Cleveland, appointed assistant vice president-marketing and pricing, a new department resulting from the coordination of the Market Research and Rates and Divisions Departments. The new department will have three divisions, each headed by a director. **Walter R. Tennyson,** assistant freight traffic manager, Hoboken, named director of rates and divisions there. **Austin V. Cannon,** assistant to director of market research, appointed director marketing, Cleveland; **Henry M. Schneider,** cost and market analyst, Cleveland.

Leonard M. Schukei, assistant vice president–rates and divisions, Hoboken, retired Aug. 31, after almost a half century of railroad service.

GULF, MOBILE & OHIO.—K. P. Bonner, trainmaster, Chicago Terminal, advanced to superintendent of terminals, Chicago, to succeed **George M. Mitchell,** retired. **F. Keenan** succeeds Mr. Bonner.

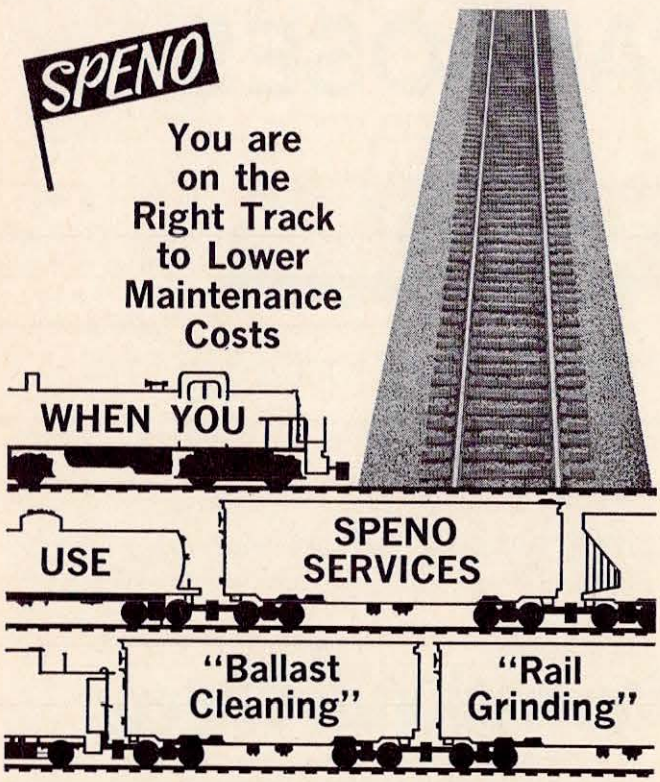
James A. Erskine has been appointed bridge and building engineer-system to succeed the late **Hans F. Bober.**

ILLINOIS CENTRAL.—James R. Miller named area sales manager, Cleveland. He was formerly marketing supervisor, **Humble Oil & Refining Co.,** Battle Creek, Mich.

Charles L. Foust, manager of materials, named to the newly created position of director of special projects. **Kenneth M. Vrshek,** assistant manager of materials, succeeds Mr. Foust.

INDIANA HARBOR BELT.—Robert E.

(*Continued on page 101*)



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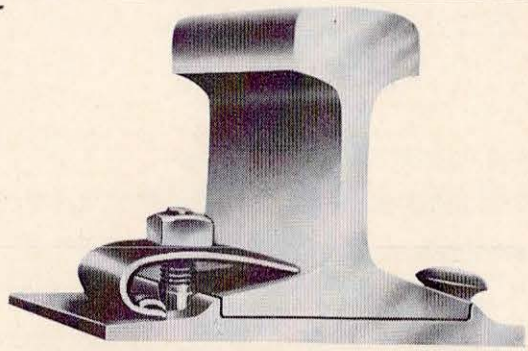

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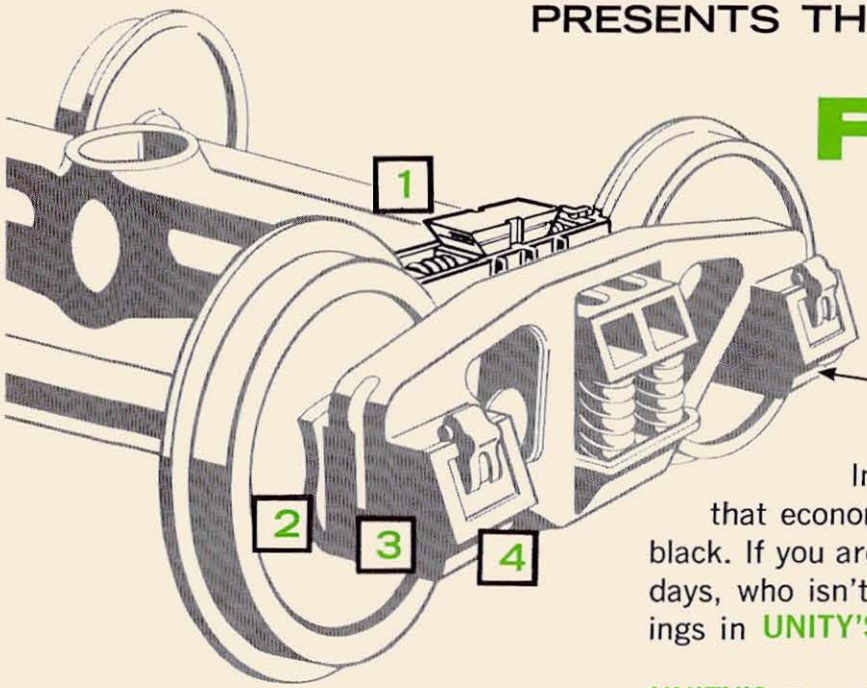

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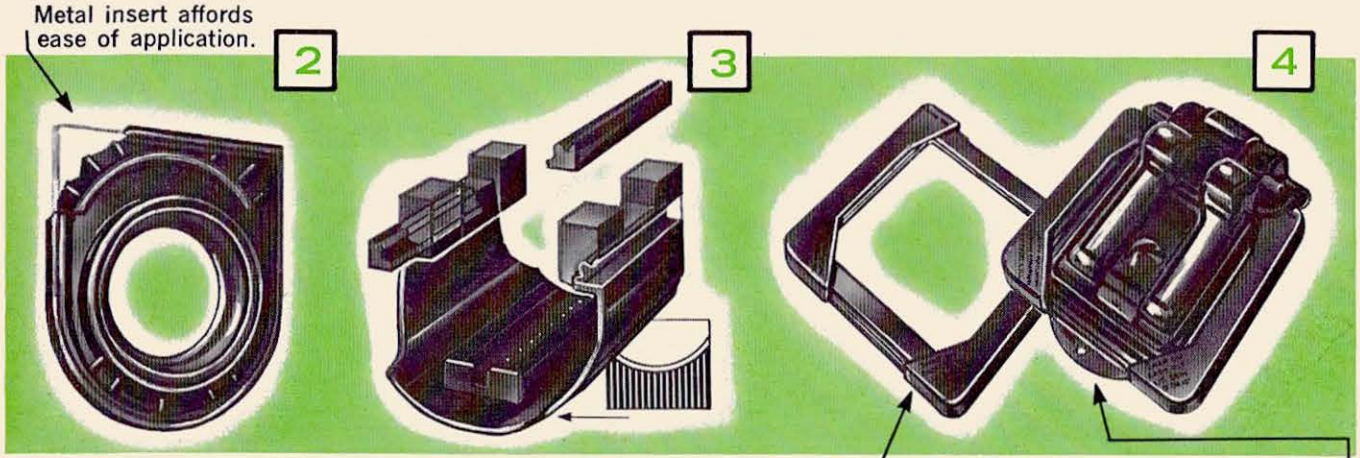

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Market Outlook

CARLOADINGS

Loadings of revenue freight in the week ended Aug. 28 totaled 514,252 cars, according to the Association of American Railroads. This was an increase of 5,926 cars, or 1.2%, compared with the previous week, and a decrease of 39,270 cars, or 7.1%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended Aug. 28 are estimated at 14.7 billion, a decrease of 3.8% below the corresponding week of 1970.

REVENUE FREIGHT CARLOADINGS

Commodity	Aug. 28 week	Aug. 21 week
Grain	24,976	25,266
Farm products	9,836	9,811
Metallic ores	38,855	43,492
Coal	108,458	106,457
Crushed stone, gravel & sand	29,647	28,982
Nonmetallic minerals	10,431	9,842
Grain mill products	19,038	19,010
Food & kindred products	24,411	24,048
Primary forest products	24,334	23,927
Lumber & wood products (except furniture)	16,110	15,850
Pulp, paper & allied products	23,611	23,199
Chemicals & allied products	24,750	25,390
Petroleum products	9,163	9,009
Stone, clay & glass products	20,713	20,003
Coke	5,117	5,103
Metals & products	17,188	15,391
Motor vehicles & equipment	22,641	20,478
Waste & scrap materials	12,432	12,267
Forwarder & shipper assn. traffic	6,412	6,648
All other carloads	65,533	63,338
LCL traffic	596	510
Total cars loaded	514,252	508,021

CUMULATIVE TOTAL, 35 weeks	1971	1970	1969
	17,345,278	18,296,910	18,717,824
Estimated revenue ton-miles (billions) 35 weeks	502.5	513.6	509.6

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended Aug. 21 totaled 24,252 cars (2.3% below the corresponding week last year) and 40,185 trailers or containers (up 1.1% from 1970). Cumulative volume for the first 34 weeks of 1971 is 762,380 cars (off 7.4% from last year) and 1,240,782 trailers or containers (down 6.6% from 1970). In addition to freight, 2,853 cars carrying 4,662 trailers or containers of mail and express traffic were handled piggyback. Cumulative figures for the first 34 weeks of 1971 are 104,023 cars (down 10.7% from the 1970 total, and 156,093 trailers or containers (down 1.3% from 1970).

IN CANADA

7 days ending	Tons of Revenue Freight	Cumulative Totals
Aug. 14, 1971	4,537,787	127,333,510
Aug. 14, 1970	4,148,076	124,770,891

FREIGHT-TRAIN CARS

● *Trailer Train.*—Ordered 13 89-ft, 4-in. standard-level cars; eight will be built by Bethlehem Steel and 5 by Pullman-Standard. This brings to 544 the number of cars ordered by TTX since Jan. 1. As of Aug. 24, TTX had 59,210 cars in service or on order.

● *Orders and deliveries.*—Orders were placed for 3,807 new freight cars in July, compared with 8,521 in the preceding month and 4,340 in July 1970. New cars on order and undelivered on Aug. 1 totaled 28,547, compared with 27,977 on July 1 and 29,040 on Aug. 1, 1970.

FREIGHT TRAIN CARS ORDERED AND DELIVERED AND BACKLOG OF ORDERS

DELIVERED

	July 1971	June 1971	July 1970
Built new by carbuilders	2,696	4,205	4,457
Built new in R.R. shops	609	1,196	989
Built new—total	3,305	5,401	5,446
Rebuilt	988	429	844
TOTAL DELIVERED	**4,293**	**5,830**	**6,290**

ORDERED

To be built new by carbuilders	3,652	6,321	4,226
To be built new in R.R. shops	155	2,200	114
To be built new—total	3,807	8,521	4,340
To be rebuilt	100	860	295
TOTAL ORDERED	**3,907**	**9,381**	**4,635**

ON ORDER AND UNDELIVERED

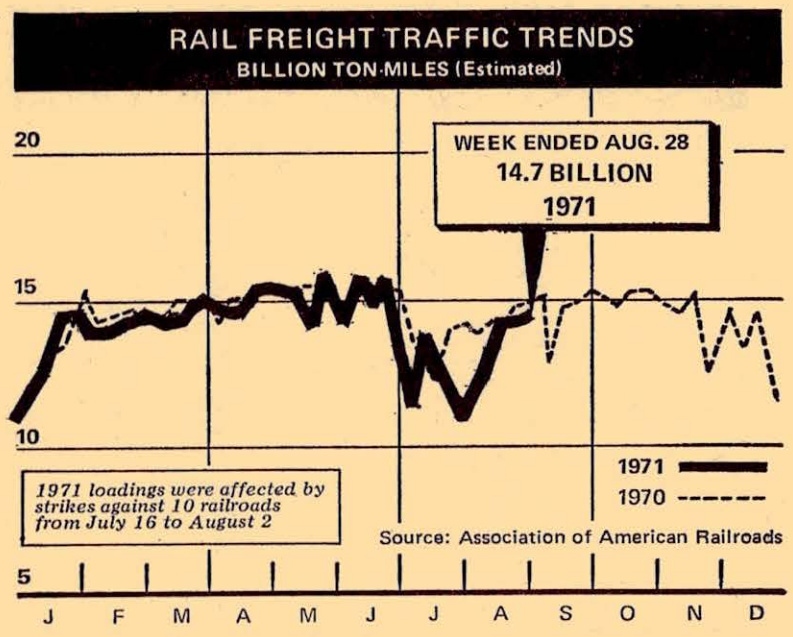
	Aug. 1, 1971	July 1, 1971	Aug. 1, 1970
To be built new by carbuilders	24,280	23,256	23,074
To be built new in R.R. shops	4,267	4,721	5,966
To be built new—total	28,547	27,977	29,040
To be rebuilt	2,343	3,231	5,804
TOTAL ON ORDER	**30,890**	**31,208**	**34,844**

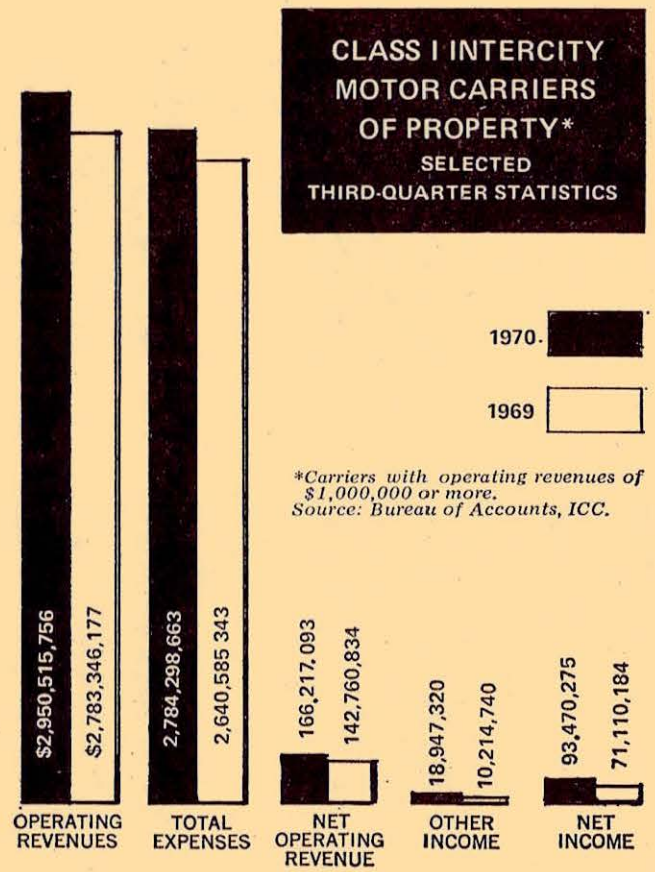
TRANSIT

● *Washington Metropolitan Area Transit Authority.*—Awarded a $42-million contract to General Railway Signal Co. for an automatic train control system to operate Metro trains at speeds up to 75 mph. GRS's low bid was within a fraction of 1% of WMATA's estimate of what the work should cost. WMATA also voted to revise its specifications and re-advertise for bids on a telephone-television communications system linking Metro's trains, stations and control center building.

FOREIGN

● *Brazil.*—Requested bids for construction of 1,320 ore cars and 14 cabooses. Bid deadline for the ore cars is Nov. 22; for the cabooses, Nov. 29. Financing is being negotiated with the World Bank.





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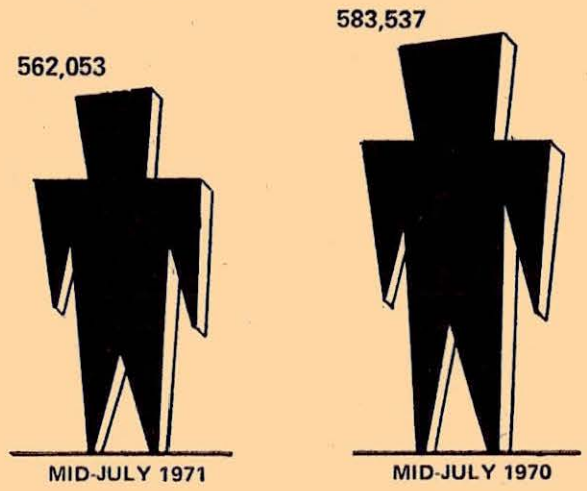

Source: Bureau of Accounts, ICC.

NEW ORDERS FOR MACHINE TOOLS*

	July 1971 ($000)	July 1970 ($000)	7 mos. 1971 ($000)	7 mos. 1970 ($000)
Metal cutting tools	55,600	62,700	327,700	467,550
Metal forming tools	21,500	14,750	143,350	146,950

MACHINE TOOL SHIPMENTS*

	July 1971 ($000)	July 1970 ($000)	7 mos. 1971 ($000)	7 mos. 1970 ($000)
Metal cutting tools	45,600	74,900	412,550	635,050
Metal forming tools	19,350	38,750	193,450	282,050

*Including foreign and domestic.
Source: National Machine Tool Builders' Association.

Viewpoint

Pueblo: Don't knock it until you've really tried it

Twenty miles east of Pueblo, and virtually light years ahead other North American rail research facilities, the High Speed Grou Test Center of the U.S. Department of Transportation is now taki shape on the plains of southeastern Colorado. Transportation Secr tary John A. Volpe has called it "a new chapter in transportation r search and development."

But the news reports quoting Mr. Volpe's ringing rhetoric we accompanied by photographs showing the Secretary, in a white cra helmet, taking a 95-mph ride in a linear-induction-motor power vehicle. There was also considerable talk at the time about Pueblo plan to float passengers through the air on TACVs. Many railroa men reacted predictably. The DOT, they grumbled, was looking f answers for which there are no questions.

All of that is more fancy than fact. As our staff report in this issu points out (a report based on an on-the-scene inspection at Pueblo and conversations with DOT planners in Washington) what will b going on at Pueblo in years to come is far from being "far out" i terms of conventional railroading.

Actually, three of the five major investigative areas at Pueb will be 100% rail oriented. These include the Wheel/Rail Dynamic Laboratory, to be completed in 1973; the 80-mph Urban Mass Trans portation Administration's test track, whose first three miles are no open and whose total of nine miles will be ready in 1972; and the 120 mph, 16-mile Federal Railroad Administration's test oval, for whic funds have been included in DOT's 1972 budget. Work is to begin o the FRA track this fall; related facilities, including an impact trac and an experimental hump yard, are planned over the next fe years as the money becomes available.

The work of the Office of High Speed Ground Transportatio has been concentrated so far on passenger movement, the first fruit of that effort being the Metroliners and the TurboTrains. But th DOT estimates that about 99% of the work done on FRA's 120-mp test track will be freight oriented.

Thinking within the DOT during the planning phases for the Pueblo facility underwent some fundamental changes. For example, the $15- million Wheel/Rail Dynamics Laboratory originally was designed exclusively for passenger equipment. But when railroads let it be known that they desired capabilities for freight cars and locomotives, an when they came forward with recommendations on axle loadings, clearances and truck spacing, these recommendations were incorporated into modifications in plans for the roller test bed.

IT'S THERE—LET'S USE IT

DOT has made it clear, to all who will listen, that it stands ready to work with any railroad that wants to use the Pueblo center.

An industry that has complained loudly of the Federal government's failure to invest in railroad R&D to the same extent that it has invested in aviation and highway development now has the opportunity to prove that it is really interested in improving its technology—and not merely carping at the competition.

(*Continued from page 94*)

Sullivan appointed general manager, Chicago, succeeding **Bert L. Strohl,** now general manager, Northern Region, **Penn Central,** Detroit (RA, Aug. 9, p. 44). Mr. Sullivan was formerly assistant general manager, Western Region, Penn Central, Chicago.

JERSEY CENTRAL.—Joseph R. Walsh, general manager, Newark, N.J., appointed vice president—employee relations. Mr. Walsh will continue to serve as chairman of the road's recently-formed labor-management task forces established to find ways and means of improving CNJ operations and service.

Lee P. McLaughlin appointed vice president—finance, Newark. Mr. McLaughlin formerly was director—operating management controls, **Penn Central,** Philadelphia.

LOUISVILLE & NASHVILLE,—J. Wade Sellers, gulf coast traffic manager, Mobile, Ala., retired July 31 after more than 45 years' service. **R. R. Jewell,** district sales manager, Chicago, transferred to Seattle. **C. A. Nick,** district sales manager, Houston, named division sales manager, Mobile.

Following merger of the **Monon** into the **L&N** Aug. 1, the following were appointed to head the new Monon division: **W. H. Vaught,** superintendent; **M. W. Tucker,** assistant to superintendent; **C. W. Farrell,** division engineer; **R. G. Jacoba,** assistant master mechanic; **L. H. Lemley,** assistant director of safety. All will have headquarters in Lafayette, Ind.

James R. McCarthy, formerly vice president-traffic, **Monon,** appointed regional sales manager, **L&N,** Louisville, and **Morris G. Pruett,** former **Monon** regional sales manager, named division sales manager, Houston. Former **Monon** traffic personnel appointed and reassigned in the **L&N** traffic department: **Arthur J. Von Tobel** and **Adrian R. Voiss,** district sales managers, New York and Chicago, respectively; **Richard A. O'Brien, Gene P. Aloisio** and **Elton N. Meaders,** assistant district sales managers, Terre Haute, Ind., Louisville and Charlotte, N. C., respectively; **C. Larry Shaughnessy,** intermodal representative, Indianapolis; **Charles E. Koehler,** district intermodal representative, Cincinnati; **William T. Flinn,** intermodal coordinator, Chicago. Sales representatives are: **James F. McClellan, Jr.,** Buffalo; **Don O. Norris,** Chicago; **John G. Tierney,** Philadelphia; **A. Lamar Couey,** Atlanta; **Marvin D. Hunsaker, Jr.,** Minneapolis; **August J. Schumacher** and **Kenneth C. Schaefer,** Milwaukee; **Robert J. Miller,** Indianapolis; **George A. Kitson,** Pittsburgh; **Leonard L. Crawford,** Pensacola, Fla.; **Joseph A. Martin,** Birmingham, Ala.

C. L. Gatton, engineer-maintenance of way, northern region, appointed assistant chief engineer-staff, Louisville. Mr. Gatton's successor is **G. T. Bonner,** division engineer, Knoxville, Tenn. **J. E. Rains,** assistant bridge engineer, named production engineer-structures, Louisville. **M. E. Dust,** project engineer, succeeds Mr. Rains.

MILITARY TRAFFIC MANAGEMENT & TERMINAL SERVICE.—Rear Admiral James E. Forrest, USN, and **Brig. Gen. Malcolm P. Hooker,** USAF, have been named Deputy and Assistant Commanders, respectively, Washington, D.C.

Allen J. Dowd appointed special assistant for transportation engineering to **Maj. Gen. Clarence J. Lang,** Commander of MTMTS.

MILWAUKEE.—T. E. Haben, assistant superintendent of the mail, baggage and express department, appointed assistant superintendent of transportation, Chicago.

W. J. Wilson, assistant district manager-sales, Toronto, named district manager-sales there, to succeed **R. G. Luscombe,** retired.

MISSOURI PACIFIC-TEXAS & PACIFIC.—W. T. Higginbotham, assistant traffic manager-Gulf Region, Houston, named traffic manager-Southern Region, Little Rock, Ark. Mr. Higginbotham's successor is **W. S. Murray,** general agent, Rochester, N. Y., who in turn is succeeded by **R. W. Merrifield,** traffic representative, Pittsburgh.

PENN CENTRAL.—Richard R. Bongartz, general solicitor, Philadelphia, retired after a 36-year railroad career in transportation law.

Administrative changes were made in the real estate department to increase efficiency and expedite sale or rental of non-railroad properties. **John J. Flood** appointed director-hotels administration, New York. **William R. Dunn,** manager—real estate relocation, Philadelphia, succeeds Mr. Flood as director-leased property administration, New York, and his former position abolished. **Richard D. Jordan,** manager-

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real estate staff, Philadelphia, appointed director—property sales administration. **Joseph J. Supon,** manager-real estate, Philadelphia, succeeds Mr. Jordan, and is replaced by **John J. Sweeney. Donald M. Weis,** manager-real estate, Cleveland, transferred to Chicago, to succeed Mr. Sweeney.

David Kelso McConnell, senior reorganization attorney, Philadelphia, appointed administrative officer to trustees. **Don A. Zimmerman,** assistant general counsel, named special assistant to trustees, with headquarters, as before at Washington D.C. **Paul R. Duke,** assistant general counsel, succeeds Mr. McConnell.

PITTSBURGH & LAKE ERIE.—C. Roy Holley, staff industrial engineer, Pittsburgh, appointed manager—industrial engineering, succeeding **John M. Weber,** resigned to accept a position with the **American Institute of Industrial Engineers** at Atlanta, Ga.

READING.—D. F. Steimling, superintendent, Port Richmond Marine Terminal, appointed manager port facilities, covering Port Richmond, Port Reading and Wilmington. **Joseph F. X. McClain,** assistant to general manager-operations, appointed assistant manager operations. **Joseph E. Heilman,** passenger trainmaster, named superintendent passenger operations. **Charles A. Newman,** assistant trainmaster, promoted to trainmaster, Port Richmond. **Ernest A. Jones, Jr.,** assistant trainmaster, West Falls, promoted to trainmaster, West Cressona. **John H. Little,** assistant trainmaster, New York zone, promoted to trainmaster, Port Reading. **Robert E. Henne,** system rules examiner, appointed passenger trainmaster, Reading Terminal.

ROCK ISLAND.—Bill B. Irwin appointed manager of equipment distribution and utilization; **Kenneth F. Hansen,** superintendent of TOFC equipment distribution; **Russell G. McNeely,** assistant to the general superintendent of transportation, all with headquarters in Chicago. **John J. Button** named general superintendent of rules and safety; **William J. Pasta,** director of transportation; **John R. Bakeman** and **Arlie H. Bender,** assistant superintendents rules and safety, all with headquarters at Kansas City, Kans.

SANTA FE.—W. H. Clark, chief engineer, Amarillo, Tex., appointed assistant chief engineer system, Chicago, to succeed **H. E. Wilson,** who retired July 31.

SEABOARD COAST LINE.—A. R. Lockamy appointed regional sales manager, Cincinnati, Ohio. **S.W. Rowan** named district sales manager, Savannah, Ga.

SOUTHERN.—Milton M. Davenport, assistant secretary of the corporation, promoted to secretary, succeeding **J. J. Maher,** who retired July 31, after 45 years with the Southern.

R. Ivan Shields, general supervisor—claims, appointed system general supervisor—administration, Security and Special Services, with headquarters as before at Washington, D.C.

SOUTHERN FREIGHT ASSOCIATION.—B. C. Lassetter, member, Standing Rate Committee, Atlanta, Ga., elected chairman of that committee.

UNION PACIFIC.—G. M. Marx and **D. A. Vermillion** named storekeepers, Spokane and Los Angeles, respectively.

Kendor P. Jones appointed general corporate attorney, law department, New York.

TRANSIT

Gerard T. Lingner, Jr., has been named manager of service planning, Transit Division, **Port Authority of Allegheny County,** Pittsburgh. Mr. Lingner is a professional planner with experience in state and local government.

OBITUARY

Hans F. Bober, 78, bridge and building engineer, **Gulf, Mobile & Ohio,** died Aug. 17.

Jack E. Eisemann, 62, director of purchases and materials, **Santa Fe,** Topeka, Kans., died Aug. 10.

Howard G. Freas, 71, former chairman, **Interstate Commerce Commission,** died Aug. 23 at a Bethesda, Md., hospital.

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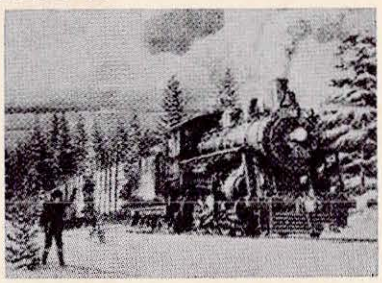

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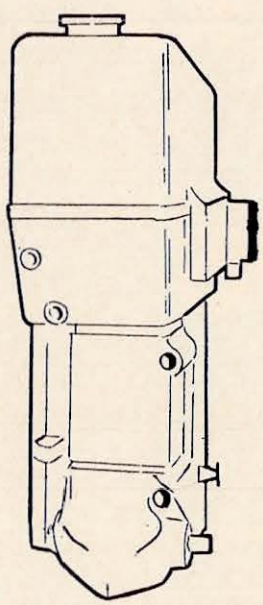

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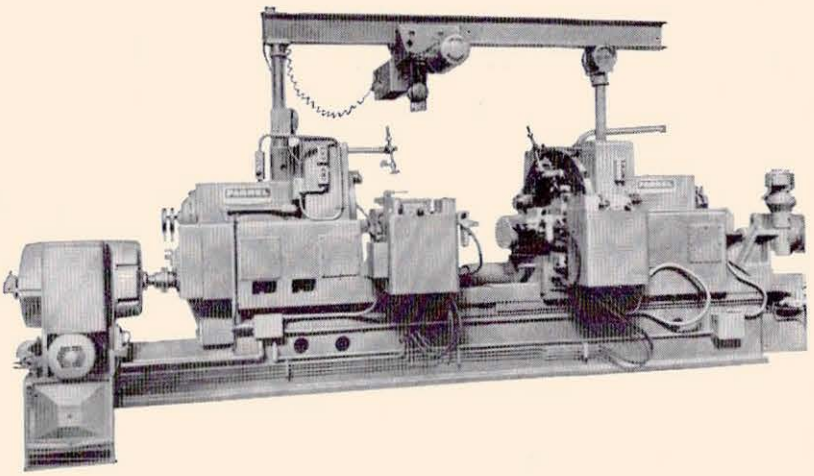

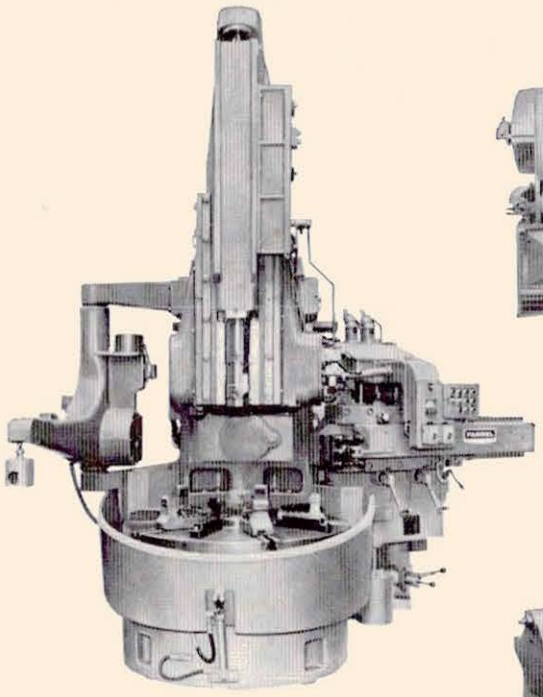

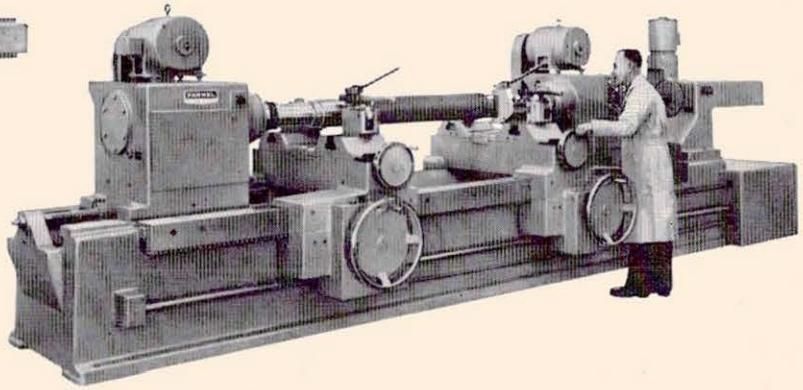

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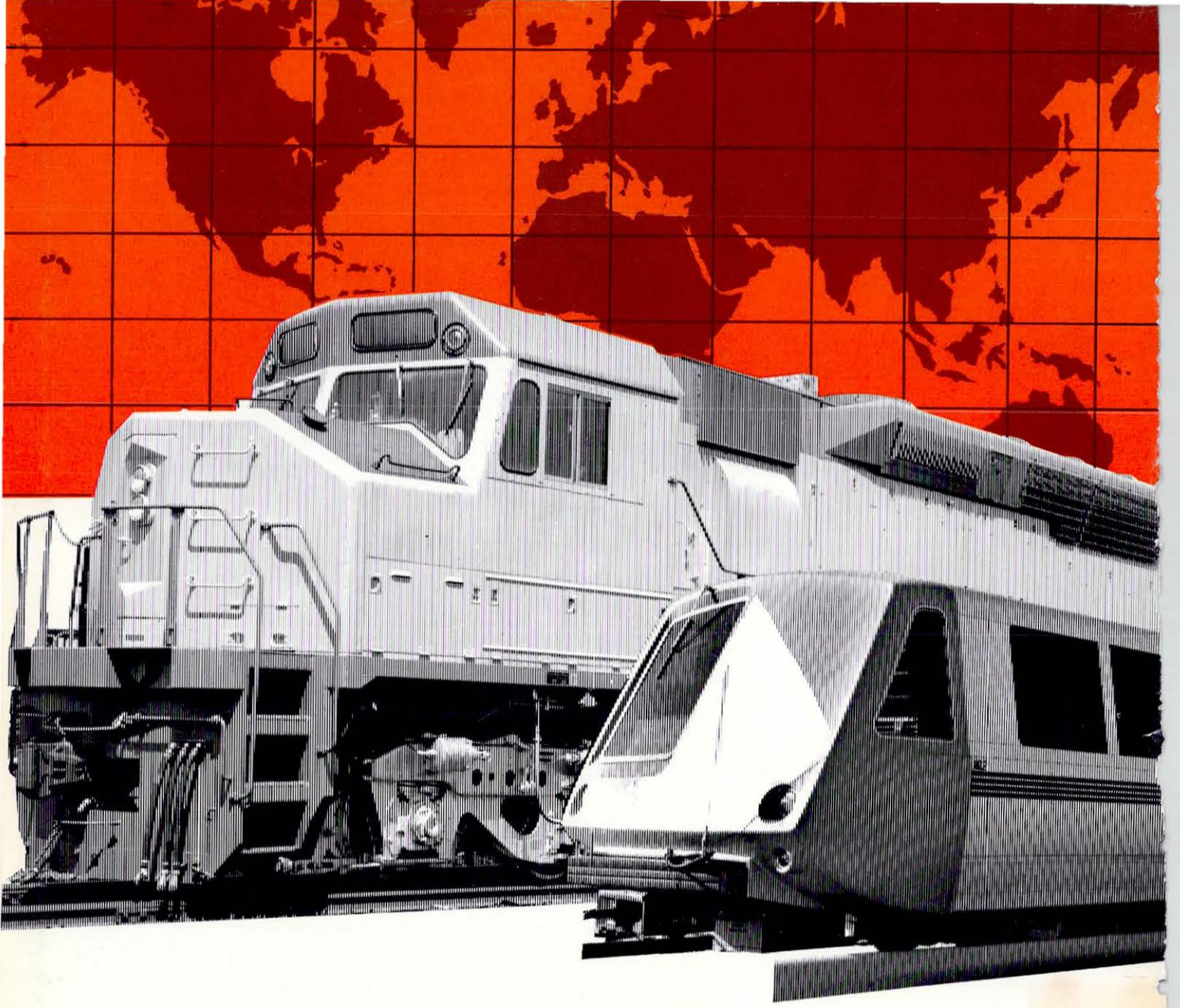

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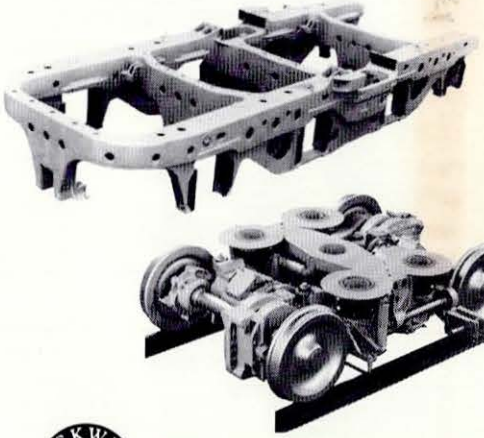

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